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ANNUAL
1949

REPORT

1949

Chicago Natural History Museum



Fabian Bachrach

ALBERT B. DICK, JR.
Second Vice-President of the Museum

Member of the Board of Trustees since 1936, now serving on
the Executive Committee and the Finance Committee

CHICAGO NATURAL HISTORY MUSEUM

Report of the Director

to the

Board of Trustees

for the year 1949



CHICAGO, ILLINOIS

JANUARY 1950
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Chicago Natural History Museum, formerly Field Museum of Natural History, faces Roosevelt Road at Lake Shore Drive. It is open every day except Christmas and New Year's Day and may be reached by elevated or surface railways, South Shore and Illinois Central suburban trains, or bus. There is ample free parking space.

SKY LINE, FROM THE NORTH TERRACE

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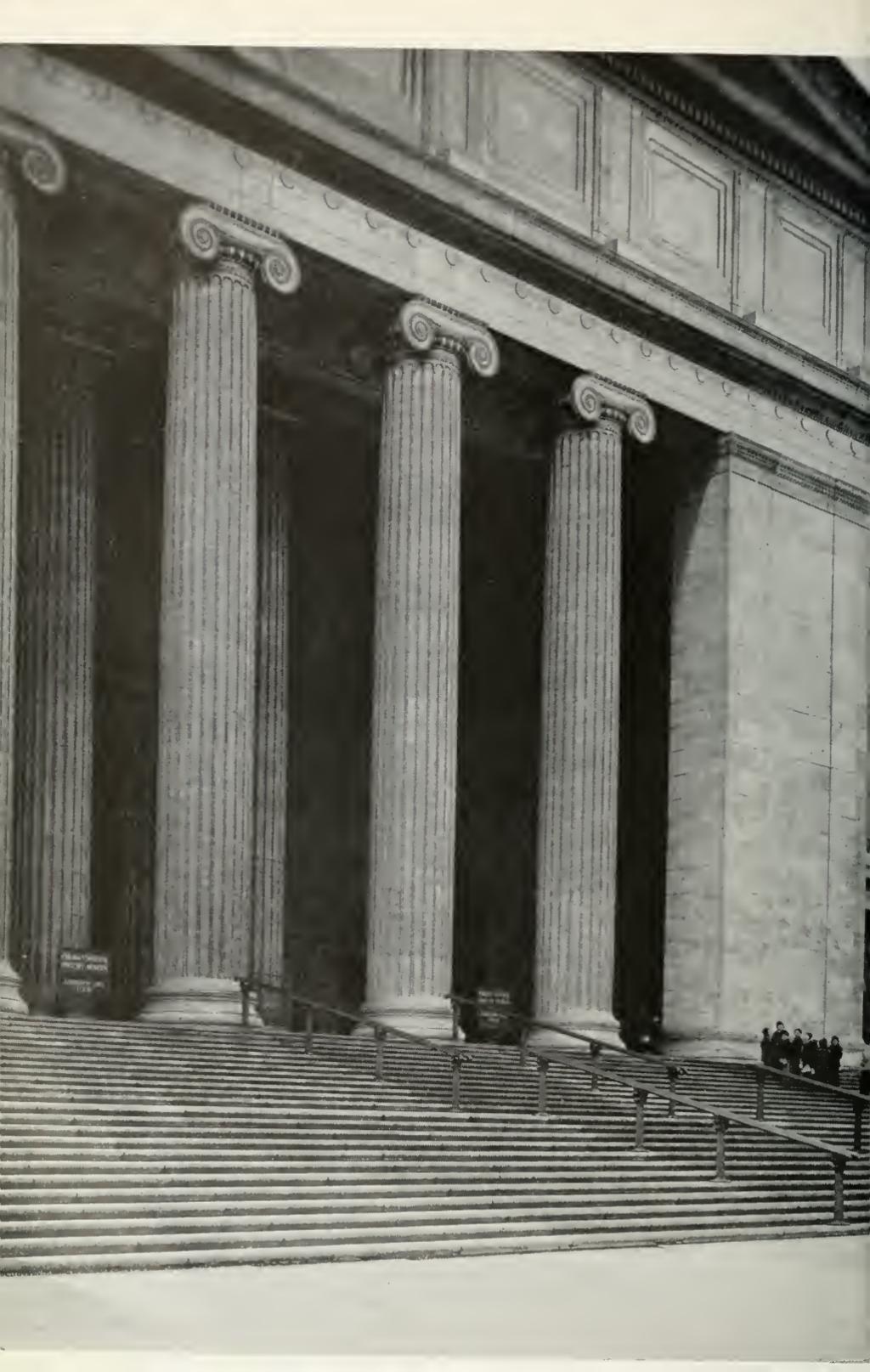
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Annual Report

of the Director

To the Trustees:

I have the honor to present a report of the operation of the Museum for the year ending December 31, 1949.

Care and preservation of the building and its contents came in for major study, which resulted in heavy expenditures being made to block the ravages of time and climate. Early in the year it became evident that the Museum heating plant, more than thirty years old, would require rebuilding or replacement because of hard usage and obsolescence. A contract was thereupon entered into for new modern boilers that were estimated approximately to cost \$182,000. Of this sum, \$130,791.52 was paid out during 1949, \$10,000 being charged to current operating expenses and the balance of \$120,791.52 being charged to a previously established "Reserve for Depreciation of Mechanical Plant." The reserve fund declined during the year from \$208,572.99 to \$87,782.78. As a result of the change the Museum's heating equipment is in superior condition, and, owing to the greater efficiency of modern boilers, economies are being realized in lower costs of fuel and maintenance charges.

Gradual settling of the filled land surrounding the Museum had during the past thirty-five years brought about a sinking of the terrace walks to a point where they had become uneven and, in some measure, dangerous. The situation was remedied by the application of a black top-covering that, in addition to giving safe

and ample approaches to the building, provided a completely water-proof topping to the areas affected. The installation of air-conditioning equipment promises longer life to the Museum's extensive collection of motion-picture films and photographic negatives by controlling both the heat and the humidity in the storage area. Continuation of tuckpointing and the addition of lightning-rod protection completes the program of building rehabilitation undertaken as soon after the war as it was possible to obtain materials. Except for changes necessitated by expansion and operating requirements the maintenance of the building in the immediate future, while still extensive, may be looked upon as normal.

TRUSTEES AND OFFICERS

Stanley Field, President of Chicago Natural History Museum, was re-elected at the Annual Meeting of the Board of Trustees in January to serve for his forty-first consecutive year. All other officers were likewise re-elected. They are: Marshall Field, First Vice-President; Albert B. Dick, Jr., Second Vice-President; Samuel Insull, Jr., Third Vice-President; Solomon A. Smith, Treasurer; Clifford C. Gregg, Secretary; and John R. Millar, Assistant Secretary.

MEMBERSHIP

It is regretted that only a slight net increase can be reported for 1949 in the number of new Members of the Museum. The total number of Members at the close of 1949 was 4,782. The number of Members in each membership classification was as follows: *Benefactors*—23; *Honorary Members*—8; *Patrons*—18; *Corresponding Members*—6; *Contributors*—168; *Corporate Members*—41; *Life Members*—168; *Non-Resident Life Members*—15; *Associate Members*—2,336; *Non-Resident Associate Members*—11; *Sustaining Members*—22; *Annual Members*—1,966. The names of all Members of the Museum in 1949 are listed at the end of this Report.

Grateful appreciation is here expressed to the Members of the Museum for loyal support that has helped to make possible the progress and continuation of the work of this institution. An expression of appreciation for past support is given also to those Members who, for various reasons, found it necessary to discontinue their memberships. It is hoped that whenever they find it favorable to do so they will again become Members and resume their association with the activities of the Museum.

LECTURE PROGRAMS FOR ADULTS

The popularity of the lecture programs for adults presented by the Museum in spring and fall is indicated by an increased attendance this year of almost 4,000 people, the total recorded attendance for the year being 18,888. It is interesting to note the great improvement in quality of portrayal that has taken place over a period of years. When the Museum began its series of lectures late in the 19th century, the presentations were either unillustrated or illustrated with black-and-white slides. Later the 35mm motion picture brought about a complete change in our offerings, while today the lectures are habitually illustrated either with color slides or 16mm motion pictures in color. So, too, the technical lecture has given way to lectures that present scientifically accurate information in language readily acceptable to the general public. The lectures this year, as usual, offered a wide range of subject matter.

ATTENDANCE

For the twenty-third successive year attendance at the Museum exceeded a million. The total number of visitors in 1949 was 1,145,359, of which number 1,002,580 were admitted without charge because they came on free admission days or belonged to classifications admitted free on all days—school children, students, teachers, members of the armed forces of the United Nations, and Members of this Museum. (For comparative attendance statistics and door receipts for 1948 and 1949, see page 87.)

The number of out-of-Chicago school groups visiting the Museum during the spring months reached an all-time high in May of 1949. These groups, which each year are steadily increasing in number as regular visitors of the Museum, come by bus, train, and automobile, and many of them start at three or four o'clock in the morning in order to spend a day in the Museum. Members of 4-H Clubs representing communities in Hawaii, Puerto Rico, and all parts of the United States, who win their trips to the International Livestock Exposition in Chicago by constructive work in their own 4-H Clubs, again were welcome visitors in the Museum. Of all the young people who visited the Museum during the year these 1,200 teen-age boys and girls were among the most appreciative and by their conduct demonstrated their qualifications as chosen leaders. The Museum was host also to a number of organizations, among them the American Association of Museums during its annual meeting in Chicago and the Illinois Audubon Society.

JAMES NELSON AND ANNA LOUISE RAYMOND
FOUNDATION FOR PUBLIC SCHOOL AND
CHILDREN'S LECTURES

The James Nelson and Anna Louise Raymond Foundation has continued its ever-widening plan of offering programs and information of all kinds to individuals and groups both in the Museum and in its extension service. These programs consist of many combinations of tours, lectures, motion pictures, demonstrations, printed stories, radio stories, and illustrated extension lectures in the schools.

Many revisions and additions were made in the extension-lecture series. One lecture, "Chicago's Green Mantle," was completely reorganized with the addition of an excellent color motion-picture of the growth and movement of plants. One entirely new lecture, "Indian Folk Art," was added. This lecture demonstrates in still and motion pictures how art was an integral part of the daily and ceremonial life of the North American Indians. Two series of "Museum Stories for Children" were published in connection with the spring and fall series of motion pictures for children. The spring

Following a Raymond Foundation tour of the halls and a lecture on fossil plants and animals, school children point out fossils in the marble of the Museum floor.



series, on living giants, described the biggest mammal, snake, lizard, bird, fish, invertebrate, tree, and grass. The fall series was on children of Indian America and included stories about the children of the cliff dwellers, Aztecs, Mayas, and Incas.

Raymond Foundation again co-operated with the Radio Council of the Chicago Public Schools in presenting eight programs in the Museum following radio broadcasts. These programs provided additional information on the radio subjects as well as opportunity for the students to see and study the materials discussed. Co-operation continued with radio station WCFL, from which a weekly children's story is broadcast on "Children's Corner." Fifty-one stories were written for this program and broadcast during the year. A television sketch on primitive hats was presented just before Easter over station WGN-TV.

A summary of all activities of Raymond Foundation for the year, with attendance figures, follows:

RAYMOND FOUNDATION ACTIVITIES

ACTIVITIES WITHIN THE MUSEUM

For children	Groups	Attendance	Groups	Attendance
Tours in Museum halls.....	826	26,768		
Radio follow-up programs.....	8	945		
Lectures preceding tours.....	64	4,721		
Motion-picture programs.....	30	25,866		
TOTAL.....			928	58,300
For adults				
Tours in Museum halls.....	386	6,995		
TOTAL.....			386	6,995

EXTENSION ACTIVITIES

Chicago public schools				
Elementary schools.....	105	36,729		
High schools.....	3	468		
Special schools.....	1	275		
Chicago private schools.....	2	215		
Suburban schools.....	1	300		
Miscellaneous.....	1	50		
TOTAL.....			113	38,037
TOTAL FOR RAYMOND FOUNDATION ACTIVITIES.....			1,427	103,332

GIFTS TO THE MUSEUM

S. C. Johnson and Sons, Incorporated, of Racine, Wisconsin, gave \$4,000 to the Museum to be used for research on wax-bearing palms. Elmer J. Richards and Donald Richards, Research Associate in Cryptogamic Botany, of Chicago, each made an additional gift of \$5,000 to be used for the purchase of specimens for the cryptogamic herbarium. A. Rush Watkins, of Chicago, added \$2,000 to The Rush Watkins Zoological Expedition Fund. Dr. Maurice L. Richardson, of Lansing, Michigan, added \$1,250 to The Maurice L. Richardson Paleontological Fund. C. Suydam Cutting, of New York, a Patron of the Museum, again gave \$500. Peder A. Christensen, of San Francisco, made an additional gift of money. Accretions for the year in trust funds were: from the estate of Mrs. Abby K. Babcock, \$284.27 for The Frederick Reynolds and Abby Kettelle Babcock Fund; from the estate of Mrs. Joan A. Chalmers, \$666.67 for The Joan A. Chalmers Fund; and from the estate of Martin A. Ryerson, \$704.47 for The Martin A. and Carrie Ryerson Fund. The Museum received \$32,000 from Stanley Field, its President; \$10,000.51 from Marshall Field, First Vice-President, for the Marshall Field Fiftieth Anniversary Fund; and \$3,391.57 from Boardman Conover, Trustee and Research Associate in the Division of Birds. Other gifts of money were received from Mrs. Ellen T. Smith, Associate, Division of Birds; Miss Lillian A. Ross, Associate Editor, Scientific Publications; Harry Hoogstraal, Field Associate in Zoology; Karl P. Schmidt, Chief Curator of Zoology; Clarence B. Randall, Trustee; and Colonel Clifford C. Gregg, Director.

In recognition of eminent service to the Museum in repeated assistance to various expeditions from the Museum, Brother León (Joseph S. Sauget y Barbier), of the Museo de Historia Natural del Colegio de La Salle, Vedado, Havana, distinguished Cuban botanist, was elected by the Board of Trustees a Corresponding Member of the Museum, the membership designation for scientists or patrons of science residing in foreign countries who have rendered important service to the Museum (see page 102 for names of Corresponding Members). Donors who give or devise to the Museum between \$1,000 and \$100,000 in money or materials are elected by the Board of Trustees to a special membership classification designated as "Contributors" and their names are enrolled in perpetuity (see page 102 for names of Contributors). Contributors elected in 1949 are: Walther Buchen, of Chicago; Henry S. Dybas, Assistant Curator of Insects; John W. Moyer, Chief of the Division of Motion Pictures; and Mrs. L. Byron Nash, of Highland Park, Illinois. Mr. Buchen

gave zoological specimens and \$1,158.83 in cash; Assistant Curator Dybas, natural-history specimens and books; Mr. Moyer, natural-history specimens, books, and motion-picture film; and Mrs. Nash, Polynesian ethnological specimens and an exhibition case. A complete list of gifts of materials from individuals and institutions appears elsewhere in this Report. Some of the collections are described under the headings of the scientific departments.

THE N. W. HARRIS PUBLIC SCHOOL EXTENSION

Half a million Chicago school children know Chicago Natural History Museum chiefly through the portable exhibits prepared and maintained by the Department of the N. W. Harris Public School Extension. These exhibits, which are circulated on a planned schedule of regular rotation among Chicago schools, are designed both for free observation and for directed study. Most of them deal with biological subjects. During the ten school months of the year two exhibits are delivered every tenth school day to each school on the circulation list, and the two exhibits left on the previous routine visit are taken away and delivered to the next school in the rotation.

Benjamin Cascard and Chris Priesmeyer load exhibition cases into one of the new trucks of the N. W. Harris Extension Department for delivery to schools of Chicago.



This plan assures that there will be no repetition of exhibits in any school over a period of several years. In a school year seventeen exchanges are made; that is, each school receives thirty-four exhibits. Five hundred and four schools and social-service institutions were receiving Harris Extension service at the close of 1949.

In past practice the four drivers who deliver Harris Extension exhibits on school days repaired damage to cases and assisted in the preparation of new exhibits on Saturday mornings. With the adoption of a five-day work week for the Museum staff in the summer of 1949 the delivery schedule was revised so that the services of the men would be available in the workshop every tenth school day and yet each school would receive the same number of exhibits as under the old schedule. After thirteen years of duty the two trucks used to deliver the exhibits were replaced in June by two half-ton panel trucks. During the summer the Museum maintenance staff equipped the interiors of the new trucks with the racks and rubber padding essential to efficient and safe transportation of exhibits.

Eight new exhibits were prepared in 1949, and seven were revised. Repairs were made on 313 cases. Thirty exhibits were damaged in circulation, a more normal figure than the high number of forty-six reported for 1948. Special loans of exhibit material other than the standard portable cases amounted to thirty-four for the year.

SPECIAL EXHIBITS

A special exhibit on the occasion of the 140th anniversary of the birth of Charles Darwin was held in February in Stanley Field Hall to display the series of eighteen letters by Charles Darwin that was presented to the Museum in 1948 by the estate of the late Mrs. Charles V. Riley. The letters (nine in Darwin's hand and nine by an amanuensis) are addressed to Benjamin D. Walsh, of Rockford, Illinois, Darwin's one zoological correspondent in the Middle West. Various memorabilia collected by Museum expeditions that followed Darwin's travels in Uruguay, Argentina, Chile, and the Galápagos Islands were available for the exhibit. Darwin's fox from Chiloe Island, for example, was obtained at the type locality by the late Wilfred H. Osgood, for many years Chief Curator of Zoology, and "Darwin's lost bird" from Uruguay was rediscovered in 1926 after nearly one hundred years by Colin C. Sanborn, Curator of Mammals. The exhibit of Darwiniana was planned and installed by Mrs. Ellen T. Smith, Associate in the Division of Birds, with the aid of other members of the staff (see page 60).



One of the special exhibits in Stanley Field Hall displayed water-color paintings of orchids by H. Gilbert Foote in combination with living plants furnished by the courtesy of William C. Blaesing and Merton C. Logsdon, of Chicago Park District.

During the year the Department of Botany prepared or assisted with four special exhibits: water-color paintings of California flowers by Miss Ethelynde Smith, on exhibit in April; a case demonstrating present methods of making plant models, prepared in connection with the forty-fourth annual meeting of the American Association of Museums, on exhibit during May; dawn-redwood material, on exhibit during July; and a group of fifty life-size water-color paintings of orchids shown in combination with a display of a series of living plants furnished by the Chicago Park District, on exhibit in November. Other special exhibits during the year were the Fourth Chicago International Exhibition of Nature Photography, held under the auspices of the Nature Camera Club of Chicago and the Museum; drawings and paintings done directly from Museum exhibits by students of the Junior School of the Art Institute of Chicago; and anatomical models of the common malaria mosquito. Additions to the permanent exhibits of the Museum are described in this Report under the headings of the scientific departments.

PERSONNEL

James E. Trott, Artist-Preparator in the Division of Insects, Department of Zoology, began leave of absence in March and resigned from the staff of the Museum in September. Mrs. Mary W. Baker, Associate Librarian Emerita, who came to the Museum in 1930 as Assistant Librarian, retired at the end of March. Harold Hinshaw, Assistant in the Herbarium, Kent Jones, Preparator in Geology, and Miss Norma Lockwood, Staff Illustrator, resigned during the year.

George Langford, Assistant in the Division of Fossil Plants, Department of Geology, was promoted to Assistant Curator, and Henry U. Taylor was appointed Preparator in Geology. George A. Davis was appointed Assistant in the Herbarium, Department of Botany. Robert F. Inger, Assistant in the Division of Amphibians and Reptiles, Department of Zoology, was transferred to the Division of Fishes as Assistant Curator, and Robert Kanazawa was made Assistant. The title of Harry Hoogstraal was changed from Assistant Curator of Insects to Field Associate in Zoology. Douglas E. Tibbitts, temporary assistant in the Division of Vertebrate Anatomy, was appointed Staff Illustrator on November 1. Mrs. Anne Stromquist, formerly associated with New York Botanical Garden, joined the staff of the James Nelson and Anna Louise Raymond Foundation in February. Mrs. Eunice M. Gemmill, Assistant Librarian, was promoted on January 1 to Associate Librarian. Miss Hilda Nordland, of the Recorder's office, was given the title of Assistant Recorder, and Harold M. Grutzmacher, of the Division of Printing, was made Assistant to the Chief of that Division.

It is with regret that I record the death of three Museum pensioners and one Museum employee: E. S. Abbey, former Captain of the Guard, who retired in 1947 after more than forty years of service; C. H. Carpenter, former Chief Photographer, who retired in 1947 after almost fifty years of service; Joseph Freeman, retired, formerly assistant engineer; and Carl Gervens, plant mounter in the Department of Botany, employed by the Museum since 1924.

The Museum thanks its volunteer workers for their faithful contribution of time and effort. Names of some of them are included in the List of Staff at the beginning of this Report, where they are designated by the titles "Research Associate" and "Associate." Other volunteers in 1949, not in that list, are: *Department of Anthropology*—Miss Rose Marie Allen, Mrs. Harvey Bumgardner, Leo Shigut; *Department of Botany*—Miss Margaret Feigley; *Department of Zoology*—Gus Kalous, Edward Palencsar.

EXPEDITIONS

The Museum had eighteen expeditions in the field during 1949. Their work is described in this Report under the headings of the scientific departments. Expeditions of 1949, including those expeditions that left for the field in 1948 and have not yet returned to the Museum, are as follows:

DEPARTMENT OF ANTHROPOLOGY: *Mexican (Sonora) Archaeological Expedition*—conducted by Donald J. Lehmer, University of Chicago Museum Fellow in Anthropology; *Micronesian Anthropological Expedition, 1949–50*—conducted by Dr. Alexander Spoehr, Curator of Oceanic Ethnology; *Southwest Archaeological Expedition*—conducted by Dr. Paul S. Martin, Chief Curator.

DEPARTMENT OF BOTANY: *Cuban Botanical Expedition*—conducted by Dr. B. E. Dahlgren, Curator Emeritus; *Cuban Botanical Field Trip*—conducted by Curator Emeritus Dahlgren; *Eastern States Botanical Field Trip*—conducted by Dr. Julian A. Steyermark, Associate Curator of the Herbarium; *Gulf States Botanical Expedition, 1948–49*—conducted by Dr. Francis Drouet, Curator of Cryptogamic Botany; *Middle Central American Botanical Expedition, 1948–50*—conducted by Paul C. Standley, Curator of the Herbarium; *New York State Botanical Field Trip*—conducted by Dr. Hugh C. Cutler, Curator of Economic Botany; *Southwestern Botanical Expedition*—conducted by Curator Cutler.

DEPARTMENT OF GEOLOGY: *Eastern States Invertebrate Paleontological Expedition*—conducted by Dr. Sharat K. Roy, Chief Curator; *Tennessee Invertebrate Paleontological Field Trip*—conducted by Eugene S. Richardson, Jr., Curator of Fossil Invertebrates; *Western Paleontological Expedition*—conducted by Dr. Robert H. Denison, Curator of Fossil Fishes.

DEPARTMENT OF ZOOLOGY: *Colombian Zoological Expedition, 1948–50*—conducted by Philip Hershkovitz, Assistant Curator of Mammals; *Rush Watkins Siamese Zoological Expedition*—conducted by A. Rush Watkins and Colin C. Sanborn, Curator of Mammals; *Southeastern States Zoological Field Trip*—conducted by Henry S. Dybas, Assistant Curator of Insects; *Southeastern States Zoological Field Trip*—conducted by Clifford H. Pope, Curator of Amphibians and Reptiles; *United States Naval Medical Research Unit No. 3, Cairo, Egypt, 1949–50*—Harry Hoogstraal (in charge, Sudan Sub-Station), Field Associate, Museum representative.



A new exhibit for Hall 5 shows men's costumes of Northern Woodlands Indians.

Department of Anthropology

Research and Expeditions

Archaeological researches were conducted in Pine Lawn Valley in the Apache National Forest of western New Mexico under a permit issued to Chicago Natural History Museum by the Forest Service, United States Department of Agriculture. The excavations, commenced in June and continued until late September, were under the direction of Dr. Paul S. Martin, Chief Curator. Assisting him were Dr. John B. Rinaldo, Assistant in Archaeology, Dr. Ernst Antevs, Research Associate in Glacial Geology, and two students, W. T. Egan and James Barter.

The Pine Lawn Valley of western New Mexico was chosen for field work because it lies in the heart of the Southwest. This region has largely been unexplored archaeologically and for this reason our work there has proved fruitful beyond measure. The Mogollon culture, a fairly recent discovery, has become better known through the researches and publications of this Museum. The report of our work of 1949, when published, will throw even more light on the development of this culture.

The objectives of the 1949 expedition were: (1) to excavate several pueblos of the Reserve period, which is tentatively dated at about A.D. 900-1000 (stone-walled surface houses first occur in Pine Lawn Valley in the Reserve period); (2) to continue the search for more evidence of the cultural remains of Early Man; and (3) to hunt for deposits of cultural materials indicating human occupation that might help close the gap in our time-scale of 800 B.C. to A.D. 500 (the estimated date of the SU site).

Three pueblos containing a total of twenty rooms were completely excavated. These pueblos were named Wet Leggett Pueblo, Three Pines Pueblo, and South Leggett Pueblo. In addition, while searching for the cemeteries and ceremonial rooms of these pueblos, three early pit rooms were found. These, too, were completely excavated.

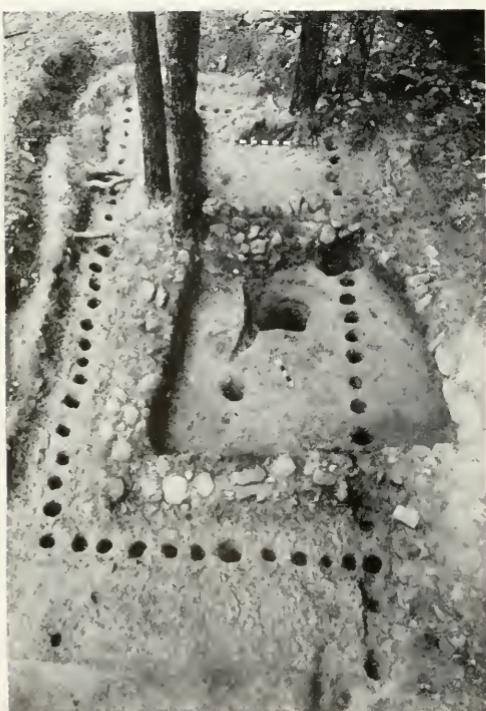
Briefly summed up, these excavations added enormously to the knowledge of the prehistory of this area and of the time-period of A.D. 900-1000. Previous to this era the Mogollon Indians had lived in underground structures called pit houses and had produced pottery that was typically Mogollon—namely, red-on-white ware. In the Reserve period we find that the centuries-long isolation of the Mogollon people had been breached. Influences from without—probably from the northern part of New Mexico—had penetrated the Mogollon stronghold and had profoundly changed the existing culture patterns. Surface houses of contiguous rooms built with masonry walls were introduced. Thereafter the people lived in multi-roomed *surface* houses instead of isolated, underground pit houses.

A surface house, in effect, constituted a small village, and that mode of life probably entailed changes in the social organization of the Mogollon Indians. Not the least important of these social changes would be the need for some governmental mechanisms, such as chiefs or councils or both. No longer could each family go its own way. Forms of social control with which to co-ordinate effort and reduce friction in a larger and more compact community would be needed. Habits of co-operation would develop. Farming would probably be done communally. This might produce a greater food supply, and this in turn would create more stability and a somewhat greater density of population. Since all the time of all the population would not be needed for food production, some energies could be devoted to the development of specialties—such as pottery-making, weaving, basket-making, architecture, art, religion, politics. All the patterns of human relationships were probably changed by this invasion of ideas or of people from the north. Although these small towns were distinctly rural, yet they

had started along the road toward urbanism, specializations, different roles (ruler and ruled, priests, artisans, etc.), and co-ordination of human efforts.

Thus, in these humble ruins one can observe the very first faltering steps that man took on the way toward civilization. The road to civilization is fraught with many uncertainties; the Mogollon Indians never attained this goal because enough time was not available. Shortly after their start on this road they were forced to abandon the Pine Lawn Valley and all adjacent areas. The reasons for this exodus are unknown at the present time. This is one of the ultimate problems that Chief Curator Martin and Dr. Rinaldo are seeking to solve. Where the Mogollon Indians went is likewise unknown, although Dr. Martin conjectures that they might have joined some other village or tribe and thus have been absorbed. This is a problem for future research.

Dr. Antevs continued his climatological studies of the Pine Lawn Valley to check the work and conclusions of past summers. This was important because heavy precipitation during the winter



A general view of Three Pines Pueblo, New Mexico, shows remains of an earlier wooden house (see rows of post holes) and stone walls put up later, dated at about A. D. 1000.

of 1948-49 had changed the exposures in the arroyos and uncovered more strata. With the aid of Dr. Rinaldo, twenty more stone tools of the Cochise culture (about 1500 B.C. to about 800 B.C.) were recovered in these geological studies.

In this connection, a most important discovery was made—the finding of the floor of a Cochise house or camp site. The area that showed irrefutable proof of occupation was small, perhaps seven feet in diameter. It is possible that this floor, on which two Cochise-type grinding stones were found, may have been roofed over by a tent of skins or possibly of brush. This is the first Cochise "house" found in the area. Now, it is known that the Pine Lawn Valley was occupied by the Cochise people from about 1500 B.C. to about 800 B.C. and by their descendants, the Mogollon people, from about A.D. 500 to about A.D. 1300. However, one puzzling problem remains: was the Pine Lawn Valley occupied continuously from 800 B.C. to A.D. 500? On the basis of indirect evidence, Chief Curator Martin and Dr. Rinaldo feel strongly that the answer should be in the affirmative, but as yet no cultural remains of human occupation for this period have been discovered. Another puzzling item is the absence of kivas (ceremonial rooms). To date, none have been found for the villages of the Reserve period.

In April the Museum Press issued *Cochise and Mogollon Sites, Pine Lawn Valley, Western New Mexico* by Chief Curator Martin, Dr. Rinaldo, and Dr. Antevs, a detailed and well-illustrated report of the results of the 1947 Southwest Archaeological Expedition. At the end of the volume is a summary written especially for interested laymen. This publication, which has brought forth new and much-needed data and has settled several controversies, has been cited as a model for students to follow in drawing up comprehensive data.

The Mexican (Sonora) Archaeological Expedition, sponsored jointly by Chicago Natural History Museum, the University of Chicago, and the University of Arizona, started field work in February and finished in May. Work was done under a permit granted by the Dirección de Monumentos Prehispánicos of the Instituto Nacional de Antropología e Historia. The expedition was under the direction of Donald J. Lehmer, University of Chicago Museum Fellow in Anthropology, and Bryant Bannister, student at Yale University. Dr. Antevs joined the expedition in the last weeks to study the geological exposures. The purposes of the expedition were: (1) to determine if possible the southern limits of the Cochise culture—the same culture that Chief Curator Martin, Dr. Antevs, and Dr. Rinaldo had found in west-central New Mexico (the Cochise

culture was first discovered in southern Arizona and has been tentatively dated at 8000 B.C. to 500 B.C.) and (2) to find traces of prehistoric contacts between the Indians inhabiting the southwestern United States and those in Middle America.

Although the expedition was greatly hampered by the worst floods in fifty years, it managed to travel some five thousand miles over a mountainous terrain. Unfortunately, contemporary erosion had not progressed far enough to determine if early sites had been buried by later depositions. However, some Cochise stone tools were found, and these may date at about 1000 B.C. Pottery appeared in the Southwest about the time of Christ, and it is generally believed that this art came from Mexico. But the pottery discovered by Mr. Lehmer is fairly late (that is, about A.D. 1000). Therefore it seems safe to say that if the art of pottery-making diffused northward from Mexico, the diffusion did not take place through the Sonoran area. The collection of stone tools and potsherds made by Mr. Lehmer will be divided between the National Museum of Mexico and Chicago Natural History Museum.

During the year Dr. Wilfrid D. Hambly, Curator of African Ethnology, completed a bibliography of African anthropology. This work, which covers the period 1937-49, brings up to date the material presented in his *Source Book for African Anthropology* (Museum Press, 2 vols., 1937), now long out of print. In preparing the bibliography, the word "anthropology" has been broadly interpreted to include archaeology, physical anthropology, and the general situation resulting from contact of Europeans and Africans. The section dealing with periodicals containing articles on African anthropology comprises 260 titles. Work has continued with the manuscript "Craniometry of Malekula," which is of exceptional interest because of the Museum's unique collection of deformed skulls from that island. To this work has been added a section on the craniometry of New Caledonia.

Dr. Alexander Spoehr, Curator of Oceanic Ethnology, conducted work on comparative problems in Micronesian ethnology based on the results of postwar research in the area and prepared for publication two papers on social organization. In November the Museum Press issued his report, *Majuro, A Village in the Marshall Islands*, a comprehensive study of the contemporary, formal social organization of an acculturated Micronesian community. Although much of the report is meant for anthropologists, there are sections that will interest many people who are concerned with our responsibilities in the administration of the Micronesian peoples.



This shell gorget engraved with the image of a Death Cult deity is one of several shell pendants displayed in the Hall of Indian America before Columbus (Hall 4).

In October Curator Spoehr left for a year's field work in the Marianas Islands, Micronesia, with headquarters on Saipan. The expedition has two objectives: The first is an examination of the culture change that is taking place among the native inhabitants of the northern Marianas Islands. These islands were greatly disturbed by the war, and one aspect of the problem is to investigate the manner in which community life is re-forming among the native peoples of the area and the processes of culture change that are of particular importance. The second objective is archaeological. It is planned to conduct surveys and excavations on Saipan, Tinian, and Rota—

the major islands in the Northern Marianas—in order to throw light on the problem of when and how these islands were first peopled as well as to delineate the culture flows that have emanated from the Malaysian area into Micronesia. The archaeological project in the Marianas is a first step in a little-known field, for excavations conducted according to the refined standards of modern archaeology have not heretofore been made in Micronesia, although valuable information has been collected by lay observers. The Micronesian expedition has been arranged through the Pacific Science Board of the National Research Council, which is currently sponsoring a series of scientific investigations in Micronesia. The expedition has also been greatly assisted by the active co-operation and support of the Navy Department.

Curator Spoehr and George I. Quimby, Curator of Exhibits, collaborated in preparing a paper on historic Creek Indian pottery. This pottery is of particular interest in that it is a culture trait that bridges the gap between the prehistoric and historic periods in the southeastern United States. Also in collaboration with Curator Quimby, Curator Spoehr worked on a research project dealing with acculturation as manifest in specimens in the Museum collection from the Oceanic and North American areas. The aim of the project is to delineate regularities in culture change during the period when tribal cultures were first modified through contact with Western civilization. An illustrated paper on this project has been prepared for publication in the Museum series.

Curator Quimby carried out research in North American ethnology in conjunction with the exhibition program and undertook research on stone and bone artifacts from ancient sites in the Aleutian Islands. In April he spent two weeks at Louisiana State University in Baton Rouge in order to select type specimens illustrative of the archaeological sequence in the lower Mississippi Valley. He also obtained larger collections from late period sites for analyses and eventual inclusion in reports dealing with the archaeology of the Plaquemine and Natchezan culture types.

Chief Curator Martin and Donald Collier, Curator of South American Ethnology and Archaeology, spent January and February in Mexico making a selection of specimens and arrangements for an extensive exchange of collections with the National Museum of Anthropology in Mexico City. The exchange is still in negotiation. This trip was made possible by a grant from the Viking Fund, Inc. While in Mexico, Chief Curator Martin and Curator Collier were able to study thoroughly the archaeological collections in the National

Museum of Anthropology, to discuss current data and problems with Mexican archaeologists, and to visit ten important archaeological sites. About 120 kodachrome pictures of archaeological interest were taken. Dr. Martin returned to Chicago by way of New York City and Washington, D.C. Visits to the anthropologists of these cities were of great benefit because mutual problems concerning archaeological work and the technique of exhibitions were discussed and several problems solved.

On his way from Mexico Curator Collier spent two days in Washington, D.C., with Dr. Gordon Willey, of the Smithsonian Institution, in order to work on a paper they have written jointly with Dr. John Rowe, of the University of California, on their investigations of Huari, a little-known but extremely important archaeological site of the Tiahuanaco period in the south-central highland of Peru. Curator Collier next spent ten days in New York conferring with Junius Bird and Dr. James Ford, of the American Museum of Natural History, and Dr. Duncan Strong, of Columbia University, concerning problems of classification of the pottery excavated in the Virú Valley during the Museum's 1946 Archaeological Expedition to Peru. Crucial samples had been shipped to New York, and these were compared with pottery excavated by these men in the same region. During the remainder of the year time was devoted to research on this collection and to the preparation of a report, not yet completed, on the 1946 expedition.

During the first months of the year Dr. Rinaldo collaborated with Chief Curator Martin in preparing a detailed report on the excavation during the summer of 1948 of Turkey Foot Ridge village located in the Pine Lawn Valley of west-central New Mexico. He also prepared graphs showing the development of Mogollon pottery and pottery designs for this report. He continued research on and cataloguing of the extensive Herzfeld collection of Persian antiquities. In addition he prepared for the Museum Press a paper on culture change in the Ackmen-Lowry area, a detailed analysis of trends and rates of change in the culture of the prehistoric Pueblo Indians of southwestern Colorado. During the summer he assisted Chief Curator Martin in the excavation of three Indian-village ruins in the Pine Lawn Valley of west-central New Mexico and, after his return from the field in the fall, made a detailed analysis of the pottery and artifacts recovered from these sites preliminary to the preparation of a report on the summer's field work. He also wrote a short paper entitled "Notes on the Turkey Foot Ridge Site Dates," to be published in the *Tree-Ring Bulletin*.

Accessions—Anthropology

The Museum is happy to record a valuable gift of 75 rare and beautiful Polynesian specimens from Hawaii and Samoa presented by Mrs. L. Byron Nash of Highland Park, Illinois. These specimens were collected by Mrs. Nash's maternal ancestors. The collection, much of which is on exhibition in Hall F (Peoples of Polynesia and Micronesia), consists of fly whisks, capes, and ornamental bands of gay-colored feathers, many of which are from birds now extinct. In addition, there are old necklaces of ivory and amber and numerous tapa (bark) cloth blankets. It would be impossible to duplicate this collection today, and the Museum is fortunate to be the recipient of a gift of this value and character.

Exhibits—Anthropology

One hall of exhibits was completed and a new series of exhibits on Indians of eastern North America was begun under the direction of Curator of Exhibits Quimby, Chief Curator Martin, Curator Spoehr, Curator Collier, and Dr. Rinaldo, with the assistance of Artist Gustaf Dalstrom, Dioramist Alfred Lee Rowell, Preparator Walter C. Reese, Ceramic Restorer John Pletinckx, and Preparator Paul J. Warner. The Hall of New World Archaeology (Indian America before Columbus) was moved from the ground floor (Hall B) to James Nelson and Anna Louise Raymond Hall (Hall 4) on the main floor of the Museum. This hall was opened officially on Columbus Day, October 12, with a tea and a special preview for Members and friends of the Museum. On May 19 and 20 there was a special showing of this hall for the meeting of the American Association of Museums.

The new exhibits for Mary D. Sturgis Hall (Hall 5) are devoted to the subject of the historic Indians (ethnology) of eastern North America. This hall is divided into the following sections: Indians of the Prairies, Indians of the Chicago Region, Indians of the Northern Woodlands, Indians of the Middle Woodlands, and Indians of the Southern Woodlands (see pages 30 and 39 for pictures of two of the five new exhibits that have been completed for the section on Indians of the Northern Woodlands).

Eleven exhibits and one diorama were completed for the section on Indians of the Chicago Region (the Indians of the Chicago region were the Miami, Illinois, Kickapoo, Potawatomi, Sauk and Fox, Ottawa, Menomini, Winnebago, and southern Chippewa). These

exhibits illustrate men's clothing, women's clothing, decorative art, household goods, warfare, hunting, games, farming and gathering, the Medicine Society, medicine men, and physical appearance as shown by portraits painted by George Catlin about 1832. The diorama shows a summer village of the Sauk and Fox Indians of Illinois of about 1750. Five exhibits for the section on Indians of the Northern Woodlands were completed (representative tribes of the Northern Woodlands are the Cree, northern Chippewa, Algonkin, Montagnais-Naskapi, and Micmac). These exhibits illustrate travel and transportation, hunting, decorative art, women's clothing, and men's clothing. One exhibit completed for the Middle Woodlands section deals with decorative art and clothing of the Iroquois. Many additional exhibits are planned for all of the sections of the new hall of historic Indians of eastern North America.

During the year a diorama showing excavation of an Indian mound was rebuilt and modernized. This diorama illustrates the excavation of a Hopewell type of mound in the middle-western United States (the Hopewell culture existed sometime between 500 B.C. and A.D. 1300). The work on this diorama was carried out by Dioramist Rowell, and the exhibit was installed in Hall 4. Two exhibits illustrating Polynesian featherwork and mats were installed in Hall F (Peoples of Polynesia and Micronesia). These exhibits were arranged by Curator Spoehr and Artist Dalstrom.

A new exhibit for Hall 5 shows women's costumes of Northern Woodlands Indians.





A reproduction of wood or shield fern (*Dryopteris*) is a new exhibit in Hall 29.

Department of Botany

Research and Expeditions

During 1949 Paul C. Standley, Curator of the Herbarium, continued his expedition to middle Central America, where he visited botanically unexplored regions in Honduras and Nicaragua and discovered many new and interesting records. Dr. Theodor Just, Chief Curator, studied living and fossil Cycadaceae in connection with the revision for publication of the manuscript on this group of gymnosperms by the late Professor Charles J. Chamberlain, who was a Research Associate in the Department of Botany, and Professor A. W. Haupt, of the University of California at Los Angeles. Dr. B. E. Dahlgren, Curator Emeritus, continued his studies of American palms and collected for several months in Cuba.

Dr. Julian A. Steyermark, Associate Curator of the Herbarium, studied his large collections from Ecuador and Venezuela as well as the Venezuelan collections made by Llewelyn Williams, Associate in Forest Products. In connection with the "Flora of Guatemala,"

now in process of publication by the Museum Press, Dr. Steyermark visited the United States National Herbarium and the New York Botanical Garden to check critical material and records of distribution. After his return he spent considerable time on the identification of miscellaneous collections sent to the Museum, especially from Central and South America, Mexico, and the United States. In connection with his work as Research Associate of the Missouri Botanical Garden, he was in the field at several times during the season to get new records of Missouri plants and to make surveys.

J. Francis Macbride, Curator of Peruvian Botany, carried on studies of the flora of Peru at various herbaria in California. Dr. José Cuatrecasas, Curator of Colombian Botany, was occupied with organization, identification, and monographic studies of his extensive collections of Colombian plants. Dr. Earl E. Sherff, Research Associate in Systematic Botany, visited Guatemala in search of tree dahlias and carried on cultural investigations of critical species of this genus. He also pursued his monographic studies.

Dr. Francis Drouet, Curator of Cryptogamic Botany, returned in February from an expedition along the Gulf of Mexico from Louisiana to Florida. Some 15,000 specimens, chiefly algae, were collected, largely in co-operation with Robert P. Ehrhardt, of Seattle, Percy Viosca, Jr., of New Orleans, Dr. Lewis H. Flint, of Louisiana State University, Dr. R. L. Caylor, of Mississippi Delta State Teachers College, Dr. A. J. Bajkov, of the Biloxi Oyster Laboratory, Harold B. Louderback, of Roosevelt College, Dr. Melvin A. Brannon, of the University of Florida, and Dr. Chester S. Nielsen, Dr. Grace C. Madsen, and Miss Dorothy Crowson, of Florida State University. Most of these collections, along with hundreds of algae received from other people for identification, were named and filed in the Herbarium during the year. With William A. Daily, of Butler University, Curator Drouet continued work on a revision of the non-filamentous Myxophyceae. Mr. and Mrs. Daily photographed several hundred type specimens concerned in this project. Dr. Hanford Tiffany and Donald Richards, Research Associates, pursued their studies of algae and bryophytes respectively. Miss Margaret Feigley, volunteer worker, determined the species of large numbers of mosses and hepaticas. Miss Crowson, who spent three months at the Museum, studied algae and assisted with the last of the preparation of the fungus collections.

During January and February Dr. Hugh C. Cutler, Curator of Economic Botany, accompanied Dr. Dahlgren on an expedition to Cuba to study and collect palms. Curator Cutler studied some of

this material after his return and, during the summer, made viability studies on pollen samples collected by Curator Emeritus Dahlgren on his second trip in 1949 to Cuba. During April and May Curator Cutler studied populations of desert plants, especially of *Ephedra*, in northern Arizona. Several large collections of cultivated plants made by archaeologists and ethnologists in various parts of the New World were identified, and work on an especially large and complete collection from Peru is being continued. During the last part of the year considerable time was spent in assembling materials for displays and for reinstallations of the economic plant exhibits. At the end of the year he went to the Bailey Hortorium, Ithaca, New York, where he studied collections of useful plants.

Approximately forty-four thousand specimens and type photographs were mounted and distributed in the phanerogamic and cryptogamic herbaria. Under the direction of Mrs. Effie M. Schugman more than twenty thousand specimens and photographs of cryptogams were mounted on sheets. These were filed in the herbarium cases by Curator Drouet. From its large collections of negatives of type and historical specimens of American plants in European herbaria the Department of Botany sold and sent in exchange during the year more than nine thousand prints to other institutions and to botanists for study purposes.

Exhibits—Botany

Considerable progress was made toward the reinstallation of the botanical exhibits to take full advantage of the new lighting recently introduced in Martin A. and Carrie Ryerson Hall (Hall 29, Plant Life), a project to which the entire staff of the Plant Reproduction Laboratories devoted most of its time. During the year forty-three exhibition cases and their respective contents were reconditioned and rearranged. Two new plant models were added to the synoptic exhibit of plant families in Hall 29—a flowering plant of meadow beauty (*Rhexia*), the only local member of the tropical *Melastoma* family, and a reproduction of a wood or shield fern (*Dryopteris*), a widely distributed genus of handsome ferns with compound foliage. A leafy branch of the American linden (*Tilia*) was prepared and installed in Charles F. Millspaugh Hall (Hall 26, North American Trees). Ten small models to illustrate the principal groups of the plant kingdom, including bacteria, fungi, algae, mosses, and vascular plants, which were requested over a year ago by the Department of Geology, have been completed and delivered.

Accessions—Botany

A number of important additions to the phanerogamic herbarium were made during the year. The most noteworthy of these are the following: 1,178 plants sent as exchange by the United States National Museum, representing specimens mostly from South America and the West Indies; 1,018 Illinois plants collected by Virginius H. Chase, sent as exchange from the Peoria Academy of Science; 708 specimens from Colombia and Brazil collected by Dr. Richard Evans Schultes; 560 specimens from Chiapas, Mexico, collected by Eizi Matuda; 522 Kansas plants collected by W. H. Horr, sent as exchange from the Department of Botany, University of Kansas; 462 plants from Texas and neighboring states, collected by Dr. Rogers McVaugh and sent as exchange from the University of Michigan Herbarium; and 380 Panama plants collected by Paul H. Allen, sent as exchange by the Missouri Botanical Garden. Aside from material accruing from Museum expeditions, more than 9,000 cryptogams were accessioned. About 5,000 cryptogams were purchased with funds provided by Elmer J. Richards, of Chicago, and Research Associate Richards. Among these were 2,011 algae of the herbarium of the Reverend Francis Wolle, which had been on loan to the Museum from Philip W. Wolle since 1939. More than 2,000 cryptogams were received in exchange; the remainder were gifts.



Dr. B. E. Dahlgren, Curator Emeritus of Botany, is shown studying collections of palms, Nueva Gerona, Isle of Pines.



Life on a Devonian coral reef about 330 million years ago is shown in a colorful new restoration group of actual-size models made for Hall 37 by George Marchand.

Department of Geology

Research and Expeditions

Dr. Robert H. Denison, Curator of Fossil Fishes, studied one of the primitive Arthrodires, a group of peculiar Devonian armored fishes, and, in an attempt to determine the exact geological age of the fossils, visited the area in eastern New York State where the specimens originally were collected many years ago. His studies essentially have been completed, and he expects to submit the manuscript for publication early in 1950. Dr. Everett C. Olson, Research Associate in Fossil Vertebrates, continued his work on the evolution of the amphibians and reptiles of the Early Permian of Texas. He completed seven papers on various components of the fauna and submitted these for publication.

Eugene S. Richardson, Jr., Curator of Fossil Invertebrates, was occupied chiefly with the work of identifying, checking, and selecting specimens for the new exhibits of invertebrate fossils for Frederick

J. V. Skiff Hall (Hall 37, Fossil Invertebrates and Fossil Plants) and also wrote a large number of labels relating to these exhibits. Curator Richardson thus had very little time at his disposal for concentrated studies, but nevertheless he prepared for the Museum Press a description of a new species of Devonian sponge that was collected during the summer by Dr. Sharat K. Roy, Chief Curator, at a quarry near Buffalo, New York. In addition, Curator Richardson spent his spare time surveying the fauna of the Pennsylvanian deposits near Coal City, Illinois. For many years the flora of these deposits has interested George Langford, Assistant Curator of Fossil Plants, and he was actively engaged in preparing a comprehensive report on this flora before joining the staff. During the year he revised and added considerable new material to his manuscript.

Dr. Rainer Zangerl, Curator of Fossil Reptiles, completed Part III of "The Vertebrate Fauna of the Selma Formation of Alabama," dealing with a revision of a marine turtle family *Protostegidae*. He also made considerable progress in his studies on the turtles of the family *Toxochelyidae*. In connection with this he visited various museums in Kansas, Texas, and the eastern states to examine their collections for certain hitherto undescribed specimens of these groups.

Bryan Patterson, Curator of Fossil Mammals, continued his work on the mammalian fauna from the Vieja formation in trans-Pecos Texas and problems associated with it. The fauna is an exceedingly interesting one that stands in time very near the Eocene-Oligocene boundary. Comparison of the Viejan mammals with related forms from earlier formations suggests that current concepts of the ages of certain faunas hitherto regarded as Late Eocene may have to be revised. Other work carried on by Curator Patterson during the year included studies on the auditory region of edentates, in collaboration with Dr. Walter Segall, of Northwestern University, and on the early Cretaceous triconodonts discovered in Texas.

Chief Curator Roy, in collaboration with Robert K. Wyant, Curator of Economic Geology, completed studies on three meteorites—Mapleton, Navajo, and Benld. The results of the studies of the first two of these meteorites were issued by the Museum Press during the year. The manuscript on Benld has been completed and, save for making up the plates, is ready for the press. Metallographic studies and chemical analysis of another meteorite, La Porte, have been completed, but the results of the work have not yet been summed up. Other work by Curator Wyant, done independently, consisted of chemical and petrographic examination of several silicified country rocks from Missouri and southwestern Illinois.



William D. Turnbull, Preparator in Geology, is shown at work on the remounting of *Eryops*, an Early Permian amphibian from the University of Chicago Collection.

Chief Curator Roy began his studies on the so-called veins in meteorites with the object of determining whether they are terrestrial or extraterrestrial. This has been a debatable subject for many years.

Almost by accident an exceedingly interesting discovery was made during the year. On their way to attend the annual meeting of the Geological Society of America, held in El Paso in November, Curators Zangerl and Denison made a brief stop in northern Texas to examine an area that had been recommended by Glen L. Evans, of the Texas Memorial Museum, as a promising one for Early Cretaceous turtles. Noticing minute bone fragments on the surface of the ground, they made a close examination and, almost at once, Curator Denison picked up a partial lower jaw of a mammal, the most exciting paleontological find of recent years. Further search yielded hundreds of fragmentary remains of other vertebrates, among which were those of dinosaurs, crocodiles, flying reptiles, and frogs—the first thus far found in deposits of Cretaceous age.

On a return visit following the meetings, Curator Denison found a second mammal jaw, better preserved than the first. The interest of the discovery lies in the fact that it was made in Early Cretaceous

deposits and so begins to close a gap in our knowledge of mammalian history that, except for a few isolated teeth found at a locality in southern England, extends from the end of the Jurassic until near the end of the Cretaceous, a span of some sixty million years. The two specimens thus far found belong to an extinct group, the Tritylodontida, that was not ancestral to any living forms, but their finding holds forth the prospect that such ancestors may be found there in the future. Further work in the region, in co-operation with the Texas Memorial Museum, is planned for 1950.

Curator Denison spent the months of May, June, and July, in Arizona, Utah, Colorado, and Wyoming, inspecting a number of localities from which Ordovician and Devonian fishes had been previously reported. Considerable collections were made, of which the Early Devonian forms from Utah and Wyoming are now being prepared and studied.

In September Curator Richardson visited three localities in western states to secure specimens required for certain exhibits in Hall 37. These included fossil mollusks from Oligocene beds near Rocky Point, Oregon, impressions of fossil leaves from Miocene lake beds in Nez Perce and Idaho counties, Idaho, and from Tertiary beds near Decker, Montana.

In November Curator Richardson and Assistant Curator Langford visited well-known localities in Tennessee, where they collected Late Cretaceous mollusks from the Ripley formation on Coon Creek, McNairy County, and from the Selma formation near Michie, in McNairy County. These mollusks will be the basis for a group-restoration of life in a Cretaceous sea to be made during the year by George Marchand, dioramist, at his studio in Ebenezer, New York. They also collected Late Cretaceous (Ripley formation) leaf impressions from Carroll County, among which are some interesting undescribed forms, and from the Early Eocene (Wilcox group) in Henry County. Specimens from these two trips not placed on exhibition will constitute a needed addition to the paleobotanical study collection. Curator Richardson accompanied Assistant Curator Langford on one of his many short collecting trips to the Pennsylvanian deposits near Coal City, Illinois.

Chief Curator Roy spent six weeks in August and September in various localities in western New York collecting Ordovician and Devonian invertebrates. During the first two weeks of the trip he was accompanied by Orville L. Gilpin, Chief Preparator. Although Mr. Gilpin is primarily trained in collecting and preparing vertebrate fossils, he mastered the technique of collecting invertebrate fossils

almost the first day he was in the field. Together they made a comprehensive collection and succeeded in securing the particular specimens needed for the new exhibits and dioramas now being installed in Hall 37.

Early in the year Curator Zangerl and C. M. Barber, of Flint, Michigan, were given a grant from the Geological Society of America that enabled Mr. Barber to make one more intensive collecting trip in the Mooreville Chalk of the Selma formation of Alabama, an area that had been visited by several Museum expeditions and has furnished a wealth of interesting Late Cretaceous reptiles and fishes. Mr. Barber was accompanied by J. A. Robbins, of Flint, Michigan, who assisted him in the field and who materially helped in making the project a success. Curator Zangerl will study the specimens collected and write up the results for publication.

The skeleton of the American mastodon that has been on exhibition since the Museum first opened its doors is a rather unsatisfactory representative of this well-known fossil mammal because it is composed of bones from several individuals. Mastodon remains come to light frequently in the Middle West and a number of such occurrences are reported to the Museum every year. Any that appear to be particularly promising are investigated in the hope that a specimen complete enough for exhibition or study purposes will be recovered. One such find, a few miles southwest of Valparaiso, Indiana, was reported during the year by Myron Benedict. Curator Patterson and Chief Preparator Gilpin spent the greater part of October in excavation of the site. The specimen proved to be badly scattered, so that a great deal of digging was required, and only one-third of the skeleton was recovered, the missing parts evidently having been washed away shortly after the death of the animal. On account of the general local interest that the excavation aroused, arrangements were made to present the specimen to the Porter County Historical Society. The bones occurred on the boundary between farms owned by Mr. Benedict and C. J. Spindler, both of whom kindly permitted the necessary digging to be done.

Exhibits—Geology

Installation of new exhibits in Frederick J. V. Skiff Hall (Hall 37, Fossil Invertebrates and Fossil Plants) began in September, 1948. During 1949, sixteen additional exhibits have been completed. Of these, three are restoration groups executed in various mediums and thirteen are of fossil invertebrates and plants arranged in taxonomic

and stratigraphic sequence. With the exception of the restoration groups or dioramas that are the work of George Marchand, a noted sculptor-artist of Ebenezer, New York, all other exhibition work in this hall has been done under the supervision of Curator Richardson and the technical direction of Harry E. Changnon, Curator of Exhibits, with the assistance of Preparators Henry Horback, Henry U. Taylor, and Kent Jones. Curator Changnon, who is to be commended for his able planning of the exhibition material, is largely responsible for the esthetic qualities of the exhibits. The Preparators also deserve equal commendation for the infinite care with which they have installed the specimens and labels. Other members of the Museum staff who have contributed to the success of the exhibits are the three Artists, Gustaf Dalstrom, John Conrad Hansen, and Joseph B. Krstolich, and Emil Sella, Curator of Exhibits in the Department of Botany.

In the Hall of Economic Geology (Hall 36) five new exhibits were installed during the year. Four of these exhibits concern the ores and uses of lead, zinc, and copper, while the fifth exhibit, for which photographs were donated to the Museum by the Standard Oil Company, is a photographic presentation of the story of oil. The exhibits show the subjects with remarkable clarity and simplicity. In Vertebrate Paleontology a beginning was made in the task of remounting the skeletons of Permian amphibians and reptiles that were donated by the University of Chicago in 1947 and put on temporary exhibition in 1948. In order to place these skeletons in cases of standard Museum design it was necessary to remove them from their bases. Since many of them had been mounted more than a generation ago, it was decided to take this opportunity to remount each specimen in accordance with modern knowledge of these very early land vertebrates. Remounting of seven skeletons has been completed and work on another skeleton is well advanced. The remountings are being done by Chief Preparator Gilpin and Preparators Stanley Kuczak and William D. Turnbull.

Accessions—Geology

A large portion of the year's important additions to the collections were made by Museum expeditions. The collection of primitive fossil fish was more than doubled as a result of the expedition of Curator Denison to the western states. From Colorado came numerous remains of Ordovician ostracoderms, the earliest known vertebrates. Early Devonian fishes were obtained from Beartooth

Butte, Wyoming, and the Bear River Range, Utah. A good collection of Late Devonian marine fishes was made in central Arizona, while the fresh-water fish fauna of this age was represented by smaller collections from a number of localities in the mountains of Colorado and Wyoming. By far the most noteworthy addition of the year, reference to which has been made earlier in the Report, was the two Early Cretaceous mammal jaws belonging to an extinct group, the Triconodonta. Other additions to the vertebrate collections consisted of Cretaceous reptiles and fishes from Alabama, collected by C. M. Barber under a grant from the Geological Society of America, and Permian reptiles and amphibians from Texas, collected by Research Associate Olson, whose field work was sponsored by the University of Chicago.

Among the gifts, mention should be made of the invertebrate fossils and fossil plants presented by Dr. and Mrs. R. H. Whitfield, Associates in Fossil Plants, and their son, Jon S. Whitfield, of Evanston, Illinois. The Museum was again fortunate to receive three meteorites as a gift from Stuart H. Perry, of Adrian, Michigan, two of which are new to the Museum's collection of meteorites.

This scene, a life-size reconstruction of animals extinct for almost 400 million years, is one of three completed by George Marchand for installation in Hall 37.





A class from the University of Chicago studies cranial morphology of vertebrates at the Museum, with D. Dwight Davis, Curator of Vertebrate Anatomy (center), and Dr. Rainer Zangerl, Curator of Fossil Reptiles (left), who are acting as instructors.

Department of Zoology

Research and Expeditions

Research within the Museum led to progress on various long-term projects and to the completion of some manuscripts and the publication of others. In the Division of Mammals Curator Colin C. Sanborn, a world authority on the classification of bats, continued his studies on the taxonomy of these creatures, which constitute one of the most sharply defined of the mammalian orders. In connection with his expedition to Siam he was able to study collections of bats in the Raffles Museum in Singapore, the Indian Museum in Calcutta, and the British Museum (Natural History) in London. Luis de la Torre, temporary assistant, worked on Guatemalan collections of mammals through January, when he returned to his studies at the University of Michigan.

South American and Central American birds occupied Associate Curator Emmet R. Blake and Research Associate Melvin A. Traylor, Jr., in the Division of Birds. Curator Austin L. Rand continued

his studies on the taxonomy, distribution, and ecology of African and other Old World birds. The conclusion of *Catalogue of Birds of the Americas* with the publication of the section on birds of prey, by Research Associate Boardman Conover and the late Charles E. Hellmayr, forms a landmark in the history of the Division of Birds, for this work, begun in 1909 by the former Curator of Zoology, Charles B. Cory, had grown to fifteen volumes. Mr. Conover continued his studies on game birds, especially the South American tinamous. Mrs. Ellen T. Smith, Associate, carried on considerable curatorial work in addition to her work with exhibits.

Clifford H. Pope, Curator of Reptiles, continued his detailed studies of the altitudinal and ecological distribution of the remarkable salamander fauna of the Appalachian Region. Curator Pope's studies bear on the currently much-discussed topic of "speciation," i.e., the origin of species. Robert F. Inger, Assistant Curator of Fishes, on loan from the Division of Fishes, made much progress on his report on the amphibians of the Philippines, based on the specimens collected by the Museum's Philippines Zoological Expedition of 1946-47.

In the Division of Fishes Curator Loren P. Woods continued the studies on fishes of the northern Marshall Islands in co-operation with Dr. Leonard P. Schultz of the United States National Museum. He engaged also on a review of the marine fish family Pomacentridae, the damselfishes. It was agreed late in the year that Curator Woods should bring to a close the work on the marine and fresh-water fishes of Panama. This work, of which five volumes have been published by the Museum Press, represents a definitive account of the Panama fish fauna undertaken by the Smithsonian Institution on the occasion of the construction of the Panama Canal. The former Assistant Curator of Zoology at the Museum, the late Seth E. Meek, was associated with Samuel F. Hildebrand (representing the Smithsonian) in both field work and publication. The manuscript for the supplementary volume on the marine fishes was well advanced by Mr. Hildebrand at the time of his death, and Curator Woods had had the advantage of association with him during his 1947-48 studies at the National Museum. The collections made by the Museum's Bermuda Deep-Sea Expedition in 1948 were supplemented by collections of shore fishes, most notably by the deposit for study of the Mowbray collection, accumulated in Bermuda during the past thirty-nine years by Louis L. Mowbray, Sr. Studies on the deep-sea material by Mrs. Marion Grey, Associate, and on the shore fishes by Robert Kanazawa, Assistant, promise important results.



Dr. Austin L. Rand, Curator of Birds, and Miss Pearl Sonoda, secretary, Division of Mammals, unpack incoming collections of birds and mammals from the Philippines.

In the Division of Vertebrate Anatomy the major research program continued to center around the giant panda and related carnivores. Curator D. Dwight Davis is attempting to determine, as the final and most important phase of this study, the nature of the adaptive changes seen in the panda, to define some of these in terms of mechanics, and to elucidate their bearing on broad evolutionary questions. Excellent progress was made on completing and labeling the drawings that will illustrate this report. Curator Davis also made a detailed study of the head of the dogfish shark, the example of a generalized vertebrate used in all courses in comparative anatomy, in order to bring together the results of numerous special studies on the shark's head reported in the literature of the subject and to combine them with original data. The burrowing locomotion of specialized amphibians and reptiles received continuing attention during the year, and observations and photographic records

were made of "sand-swimming" lizards. Dr. R. M. Strong, Research Associate in Anatomy, continued work on his detailed anatomy of the salamander *Necturus*.

In the Division of Insects, research by the staff was of necessity subordinated to the work of distributing new collections for study and of rearrangement of the collections in new cases. Continuing studies on beetles of the families Histeridae and Ptilidae were carried on by Assistant Curators Rupert L. Wenzel and Henry S. Dybas, on the Mordellidae by Eugene Ray, temporary assistant, and on the Staphylinidae by Research Associate Charles H. Seavers. Research on the Museum's collections of insects is in progress at various museums and other institutions by specialists to whom special collections have been sent. Thus Major Robert Traub, of the Army Medical Center, Washington, D.C., is reporting on fleas, and Dr. P. J. Darlington, of the Museum of Comparative Zoology, at Harvard University, is engaged on the carabid beetles, both studies being based on the collections of the Museum's Philippines Zoological Expedition of 1946-47.

In the Division of Lower Invertebrates Curator Fritz Haas concluded his studies of the mollusks of Lake Titicaca, collected by the Percy Sladen Trust Expedition in 1937 and consigned to him for report by the British Museum (Natural History). Chicago Natural History Museum will retain duplicate specimens of the surprisingly large number of new species and new genera to be described. Curator Haas identified and described much new South American material from miscellaneous sources, especially from the Museo de Historia Natural "Javier Prado," in Lima.

Chief Curator Karl P. Schmidt was engaged during the year in the revision of *Ecological Animal Geography* (Hesse, Allee, and Schmidt) for a new edition. He also completed the final proof-reading of *Principles of Animal Ecology* (with W. C. Allee and others), which appeared in October.

The major expedition of 1949 was the Rush Watkins Siamese Zoological Expedition. A. Rush Watkins, sponsor of the expedition, Curator Sanborn, and Frank C. Wonder, Taxidermist, left in May for Bangkok. Six weeks were spent in the north-central part of Siam at the Gairdner rice plantation at Wang Pratart. After specimens of the rare Eld's deer were obtained, together with a series of small mammals including a representation of the squirrels for which the fauna of southeast Asia is remarkable, the party moved to southern Siam, on the Malay border, where Curator Sanborn and Mr. Watkins were successful in obtaining two Malay tapirs, to be



William J. Gerhard, Curator of Insects, is checking the Museum's great Strecker Collection of moths and butterflies according to identification, type, and locality.

used in a projected habitat group for William V. Kelley Hall (Hall 17, Asiatic Mammals). In addition to mammals, the expedition collected fresh-water fishes, amphibians and reptiles, and birds.

The Colombian Zoological Expedition, which went into the field in 1948, is directed mainly toward a comprehensive report on the mammals of Colombia. Philip Hershkovitz, Assistant Curator of Mammals, had been engaged on this project for the Smithsonian Institution before coming to the Museum, a project that forms a logical continuation of Andean studies begun by the late Wilfred H. Osgood, Chief Curator, and continued by Curator Sanborn in Peru and Chile. Assistant Curator Hershkovitz established his base for the early part of 1949 in Barranquilla, collecting at six localities in northern Colombia before moving to Medellín in November.

Field studies within the borders of the United States included Curator Pope's collecting and field observations on salamanders in Virginia, Kentucky, Tennessee, Illinois, and Arkansas. He worked effectively during July and August from the convenient base afforded by the University of Virginia summer school at Mountain Lake,

Virginia. In early autumn Assistant Curator Dybas visited Florida and other southeastern states to collect the minute beetles of the family Ptilidae on which he specializes. Because these beetles are especially to be found in the pores of the polypore fungi, the trip was arranged to coincide with the peak of development of the polypores. Assistant Curator Dybas was accompanied by two graduate students in the Department of Zoology of the University of Chicago, Harry Nelson and Robert Sokol, University of Chicago Museum Fellow in Zoology. In the local field, the remarkable autumn aggregation of blue racers in the Indiana Dunes was again observed. Assistant Curator Inger, assisted by various willing members of the zoological staff, marked and released snakes and recaptured eight of the specimens marked in 1948.

Chief Curator Schmidt represented the Museum and the National Research Council at the Seventh Pacific Science Congress in New Zealand in February. This enabled him also to make collections in the field of lizards and frogs and to study the lizard-like reptile of New Zealand, the tuatara. To observe this remarkable creature, he visited the outlying islands of Karewa, in the Bay of Plenty, and Stephen and Middle Trios islands in Cook Strait. He was aided by William H. Dawbin, Lecturer at Victoria University College, Wellington, and arranged for Mr. Dawbin's continuance of studies on the tuatara.

Field work in the Philippines and Peru was supported by the Museum during the year, with gratifying resulting additions to the collections. D. S. Rabor, Professor of Zoology at Silliman University, who had aided the Museum's Philippines Zoological Expedition in 1946-47, continued collecting on Negros Island. Celestino Kalinowski, who returned to Peru after a year's training and study in the Museum's laboratories, began collecting immediately on his return to the Kalinowski estate, "La Cadena," at Marcapata, in the "montana" of Peru. The first installment of collections received from him indicate that he is established in a favorable region to aid in the program of studies on the zoology of Peru initiated by the Museum in 1911, the logical continuation of the Chilean program.

Accessions—Zoology

The more important gifts of specimens during the year include a collection of 452 East African bird skins and a rare African viper, from Mr. and Mrs. Walther Buchen, of Chicago; 247 South American bird skins from Research Associate Conover; the type and paratype

of a new species of salamander from Dr. S. C. Bishop, of the University of Rochester; 499 specimens of amphibians and reptiles from Panama, collected and presented by Harold Trapido; and 391 specimens of reptiles and amphibians from East Africa, presented by Dr. Henry Field, of Washington, D.C. A notable collection of 101 specimens of fishes from the Mediterranean, representing 28 species, was presented by Leander J. McCormick, fishes that are of particular importance to West Indian (and Bermudan) studies of marine fishes because early descriptions of tropical marine fishes were mainly based on the Mediterranean fauna. In connection with enquiries regarding the relations of the domestic pig with its wild relatives, the Armour Livestock Bureau, through Colonel Edward N. Wentworth, presented the heads of five purebred pigs of different breeds, from which skulls were prepared. As in previous years, the Chicago Zoological Society, Brookfield, Illinois, and the Lincoln Park Zoo, Chicago, made major contributions to the Museum's materials for anatomical study and to the general collections of birds, mammals, amphibians, and reptiles.

In the Division of Insects the largest single gift was of 3,035 specimens from Mexico, Colombia, and Micronesia, collected by Assistant Curator Dybas on collecting trips before joining the Museum staff and during his years in the Pacific Islands with the United States Army (1943-45). Important gifts of land and fresh-water shells were received in the Division of Lower Invertebrates from Dr. Otto Schubart, of Sao Paulo, Brazil, Dr. Harald Sioli, of Belem, Brazil, and R. Wright Barker, of Maracaibo, Venezuela. Walter J. Eyerdam, of Seattle, Washington, presented mollusks that he had collected in various parts of South America. A collection of marine shells especially selected to fill gaps in our collections was presented by Dr. Jeanne S. Schwengel, of Greenwich, Connecticut. This collection contains a specimen of one of the living species of *Pleurotomaria*, a genus of snails, mainly known from fossils, whose lineage extends to the Silurian period.

The largest single accession of mammals was that from the Colombian Zoological Expedition (1948-50), from which 755 specimens reached the Museum, together with unaccessioned birds, reptiles, and amphibians. An important purchase of West African bird skins from Reverend A. I. Good added 721 specimens to the growing African collections. In the Division of Reptiles Curator Pope's summer collecting added 863 amphibians and reptiles. For the Division of Fishes a collection of about 1,000 specimens of fresh-water fishes from northern Siam was the major accession of

the year. In the Division of Insects an especially valued collection of beetles of the family Lucanidae (the stag beetles) was obtained by purchase. This collection, which amounts to 4,069 specimens, all identified, and includes some two dozen types and numerous other unique specimens, was, like other similar collections made by specialists, a "labor of love" extending over many years. Exchanges of mollusks led to the addition of paratypes of species for the most part not previously represented in the Museum.

Exhibits—Zoology

The reinstallation of the habitat group of Alaska brown bears was a major improvement in Richard T. Crane, Jr., Hall (Hall 16), where American mammals are shown in their natural surroundings. The group now shows a gigantic male, in standing position, with a female and two yearling cubs. The specimens were collected by Mr. and Mrs. William S. Street at Mother Goose Lake in the Alaska Peninsula and mounted by C. J. Albrecht, formerly of the Museum's taxidermy staff, who accompanied Mr. and Mrs. Street in Alaska.

In Hall 21, devoted to the exhibition of a systematic series of North American and exotic birds, the program of addition of "subjective exhibits" that present anatomical and other information has continued under the direction of Curator Rand, with Kenneth Woehlek, Assistant Taxidermist, in charge of preparation. This program, initiated by Rudyerd Boulton, former Curator of Birds, has been emphasized by Curator Rand, whose plans resulted in the addition of four alcove cases of this nature in 1948 (see 1948 Report). Cases placed on exhibition in 1949 deal with the phenomena of reproduction in birds, with the association of birds with man in the suburban environment of Chicago, with the architecture of nests, and with the aberrant types of nests and the range of variation in birds' eggs, together with eggs of the commoner species nesting in the Chicago region. Mrs. Smith, Associate, directed the preparation of "Resident Birds of Chicago," the case exhibiting the principal species of birds resident throughout the year in the Chicago region as well as devices for attracting, sheltering, and feeding them.

Progress was made in Albert W. Harris Hall (Hall 18, Reptiles, Amphibians, and Insects) in the installation of models of amphibians and reptiles made in celluloid by Taxidermist Leon L. Walters and, more recently, by Ronald J. Lambert, Assistant Taxidermist, under Mr. Walters' direction. A screen is devoted to the "front-fanged snakes," the cobras, mambas, coral snakes, and sea snakes. Re-

arrangements of other screens were made to bring together the vipers and pit vipers (with an enlarged model of a rattlesnake head to show the pit) and to insert models of frogs and toads, such as the giant marine toad so abundant in tropical America, bright-colored tree frogs, and other forms new to the exhibits of these creatures. The protectively colored green tree-boa, in its typical resting pose in a saddle-shaped coil on the limb of a tree, is shown with the boas and pythons, and the large water snake of the East Indies, one of the principal sources of snake-skin leather for shoes, is placed with them. Further work of installation and reinstallation of the amphibian and reptile models is in progress. In the Division of Insects exhibition work was centered on the completion of the case showing the life-history of the malaria-bearing mosquito, which has been combined with an explanation of the malaria cycle in the human blood.

This magnificent group of giant Alaska brown bears in Hall 16 was collected and presented by Mr. and Mrs. William S. Street, of Seattle, Washington. Taxidermy is by C. J. Albrecht and background by the late Arthur G. Rueckert, Staff Artist.



and will include "the history
of Animal & Plant life.
Geontology" -

With my thanks for
your letter below
and for your money

Ch. Darwin

Jan 25th

Dear
Sterling
Hist. S. C.

My dear Sir:
I am a good deal concerned
with the future of our
country to speak of my
new book, let me assure
you that I am - for
present & but little of future
I don't care who the man
is and it will not
affect me in the smallest
degree - my dear

A series of eighteen letters written by Charles Darwin was displayed in a special exhibit. This valuable collection is a highly prized possession of the Museum Library.

LIBRARY OF THE MUSEUM

Demands on the resources of the Library become more exacting as research expands in the scientific departments of the Museum, and acquisitions through purchase and exchange have been made in terms of what the Library is expected to provide in printed information covering the specialized fields. Bearing in mind also the relationship of the Library with the future of the Museum, trends in research and exploration are taken into account so that required material will be at hand when it is needed.

The Library's resources are excellent, the collection is strong in scientific journals and serials, and, through continued effort, gaps in the periodical holdings have been filled and runs completed. Every effort is being made to secure additional basic material not already in the Library. Acquisitions during the past year from all sources aggregated 3,505, of which 375 were gifts. The total collection is

now 136,126. Among notable acquisitions of the past year are the following representative selections of books and serials:

BOOKS

Anton, Hermann E., *Verzeichnis der Conchylien welche sich in der Sammlung von Hermann Eduard Anton befinden* (1839)

Bakmet'ev, Porfirii Ivanovich, *Experimentelle entomologische studien vom physikalisch-chemischen standpunkt aus . . . v. 1-2* (1901, 1907)

Berlese, Antonio, *Gli insetti; loro organizzazione sviluppo, abitudini e rapporti coll'uomo*, v. 1-2 (1909, 1925)

Black, John McConnell, *Flora of South Australia*, 2nd ed., pts. 1-4 (1922-29)

Bois, Désiré Georges Jean Marie, *Les plantes alimentaires chez tous les peuples et à travers les âges*, 4 v. (1927-37)

Bresadola, Giacomo, *Iconographia mycologica*, 26 v. (1927-33)

Bruttini, Arturo, *Dictionnaire de sylviculture en cinq langues: français (texte), allemand, anglais, espagnol, italien . . .* (1930)

Camus, Aimée, *Les chênes; monographie du genre Quercus*, 3 v. (1934-39, 1948)

Carpenter, George Herbert, *The biology of insects* (1928)

Chenu, Jean Charles, *Illustrationes conchyliologiques ou descriptions et figures de toutes les coquilles connues vivantes et fossiles*, 84 pts. (1843-53)

Dallimore, W., and A. Bruce Jackson, *A handbook of coniferae*, 3rd ed. (1948)

Dalziel, John McEwen, *The useful plants of west tropical Africa* (1948) [reprint]

Dautzenberg, Philippe, *Croisières du Yacht Chazalie dans l'Atlantique. Mollusques* (1900)

Degener, Otto, *Flore Hawaïensis* (1932—) [Library has books 1-4]

Descole, Horacio Raúl, *Genera et species plantarum argentininarum*, v. 4 [Library has v. 1-3]

Dukes, Henry Hugh, *The physiology of domestic animals*, 3rd rev. ed. (1935)

Eimer, Gustav Heinrich Theodor, *Organic evolution as the result of the inheritance of acquired characters, according to the laws of organic growth*, trans. by J. T. Cunningham (1890)

Faune Ichthyologique de l'Atlantique Nord (1829-38)

Giebel, Christoph Gottfried Andreas, *Insecta epizoa* (1874)

Gistl, Rudolf, *Naturgeschichte pflanzlicher rohstoffe* (1938)

Goldfuss, Otto, *Die Binnenmollusken Mittel-Deutschlands* (1900)

Hanley, Sylvanus Charles Thorp, *An illustrated and descriptive catalogue of recent bivalve shells* (1842-56)

Hindekoper, Rush Shippin, *Age of domestic animals* (1891)

Hooker, William Jackson, *Garden ferns* (1862)

Houlbert, Constant Vincent, *Les coléoptères d'Europe: France et régions voisines*, 3 v. (1921-22)

Jickeli, Carl Friedrich, *Fauna der land-und-süßwasser-mollusken nord-Ost Afrikas* (1875)

Kiener, L. C., *Species général et iconographie des coquilles vivantes*, 11 v. (1834-80)

Lecomte, M. H., and H. Humbert, *Flore générale de l'Indo-Chine* [certain fascicles of v. 3, 4, 5, 6, and 7]

Lemée, Albert Marie Victor, *Dictionnaire descriptif et synonymique des genres de plantes phanerogames*, v. 7-8

Maynard, Charles Johnson, *Contributions to the history of the Cerionidae, with descriptions of many new species and notes on evolution in birds and plants*, pts. 1-12 (1919-26)

Meyer, Heinrich Adolf, and Karl August Möbius, *Fauna der Kieler bucht*, 2 v. (1865-72)

BOOKS (*continued*)

Moquin-Tandon, Christian, *Histoire naturelle des mollusques terrestres et fluviatiles de France*, 2 v. and atlas (1804-63)

Oudemans, Anthonie Cornelis, *Kritisch historisch overzicht der acarologie*, 3 v. (1926-37)

Owen, Richard, *Descriptive and illustrated catalogue of the fossil reptilia of South Africa in the collection of the British Museum* (1876)

Post, George Edward, *Flora of Syria, Palestine and Sinai*, 2 v. (1932-33)

Schimper, Wilhelm P., *Traité de paléontologie végétale, ou la flore du monde primitif dans ses rapports avec les formations géologiques et la flore du monde actuel*, 3 v. and atlas (1869-74)

Sowerby, Arthur de Carle, *The naturalist in Manchuria*, v. 2-3 (1922-23) [Library has v. 1]

Stehlé, Henri, *Flore descriptive des Antilles françaises*, v. 1, *Les orchidées* (1939)

Thiébaut, J., *Flore libano-syrienne (Mémoires présentés à l'Institut d'Egypte, v. 31, 40)*

Tierreich, Das, *Lfg. 28, Hymenoptera. Apidae I. Megachilinae*, bearbeitet von H. Friese

———, *Lfg. 48, Scelionidae*, von Jean Jaques Kieffer (1916)

SERIALS

Anatomical Record, v. 1-51

Aquarium, v. 1—

Berliner Entomologische Zeitschrift, v. 1-58

City of London Entomological and Natural History Society, London. *Transactions (London Naturalist)*, v. 1-38

Entomological Society of New South Wales. *Transactions*, v. 1-2 (1863-73)

Faune de France, v. 1-50 (1921-49) [continuation]

Linnean Society of London. *Transactions, 2nd ser. Botany*, v. 1-9 (1875-1922)

Schweizerische entomologische gesellschaft. *Mitteilungen*, v. 1-9 (1865—)

Tuatara, v. 1— (1947—)

SERIALS (purchased to fill gaps)

Academie des Sciences, Paris. *Comptes-rendus*, v. 106-120 (1888-95)

American Folklore Society. *Memoirs*, nos. 7, 9, 10, 12, 13, 15-18, 20, 21, 23-31, 33, 35

Botanische Jahrbücher, v. 71-74 (1940-45)

Journal of Comparative Neurology, v. 14-18, 26-53 (1904-8)

Linnean Society of London. *Journal (Zoology)*, v. 1-32

The growing importance of the Library collection has increased the interlibrary loan service not only locally but also throughout the country. The exchange of scientific and serial publications with other organizations has expanded the Kardex record to four files. As in any highly specialized research institution, the material published by other scientific organizations forms the backbone of the Library of this Museum. These publications consist of journals, bulletins, memoirs, proceedings, and transactions in which new

species are described (of first importance in taxonomy and nomenclature) and a record of research published. In this field of literature, back numbers are never old. They are constantly referred to and are bound so that they may become permanent parts of the collection. The Kardex system provides a control record that gives finger-tip information on the Library's holdings, last number received, and missing parts to be acquired.

Recataloguing of the Library's collection according to the Library of Congress classification, begun in 1947, has continued. Progress has been made in reclassifying a sizable portion of the periodical holdings, many volumes in the Museum's four departments, and separate series of special publications. Collections such as the Berthold Laufer library and the Charles V. Riley collection of books on entomology, as well as all new purchases and material currently received, have been catalogued under the new classification.

In May the card catalogue was moved to a new location in the center of the south end of the reading room. At the same time, to serve better the specialized needs of the Library, the plan of the catalogue was changed by dividing it into two sections: author and title section and classified subject section. The catalogue of the John Crerar Library was moved from a stackroom and aligned with the Museum Library catalogue in its new location so that convenient consultation of both catalogues is possible. A survey of the departmental libraries showed overcrowded shelves and resulted in the decision to transfer to the general library (with the approval of the Chief Curators and Curators) all volumes not needed for constant reference, a move that provided shelf space in the departmental libraries but added to the shelving problem in the general library. The space vacated by the change in location of the card catalogues has been used for additional shelving.

PHOTOGRAPHY AND ILLUSTRATION

The Division of Photography made during the year a total of 15,926 negatives, prints, enlargements, lantern slides, and transparencies for the Museum, other institutions, the press, and general sales. More than 106,000 negatives are now in the files.

Until her resignation in September Miss Norma Lockwood, Staff Illustrator, prepared drawings, lettering, and miscellaneous art work for the departments and divisions of the Museum as their needs required. The work of the office was ably continued by Douglas E. Tibbitts, who succeeded Miss Lockwood as Staff Illustrator.

MOTION PICTURES

Activities during the year in the Division of Motion Pictures were devoted almost entirely to completion of the Museum's motion-picture production, "Treasure House." This film, which pictures the tremendous amount of work done by the Museum staff in preparing science and natural-history exhibits, will be ready for showing in 1950 as one of the Museum's educational services. In addition, two complete motion pictures were re-edited for use in the public schools, and similar productions are being put together from material in the Museum's film library. Color transparencies and motion-picture records of natural-history subjects were made for the scientific departments of the Museum, a type of material that has come to be important to the scientific staff both as visual aid and as help in research problems.

PUBLICATIONS AND PRINTING

Distribution of the Museum's publications to institutions and scientists on our foreign exchange list was brought back to a fairly normal basis by the resumption of exchange with western Germany and by the sending of accumulated wartime and postwar issues to that area, although publications intended for Berlin and certain other areas still await more favorable shipping conditions. Seventy-two names that had been on the exchange mailing list before the war were reinstated, and forty new names were added. A total of 21,436 copies of the Museum's publications was distributed in both foreign and domestic exchange. Sales totaled 3,654 copies in the Scientific Series, 10,283 copies in the Popular Series, and 27,846 copies of miscellaneous publications, such as guides, handbooks, memoirs, and technique papers (see page 87). For future sales and other distribution an additional 12,895 copies of publications were wrapped, labeled, and stored.

The Museum Press issued during the year twenty-two titles in the Scientific Series of publications and one in the Administrative Series. The total number of pages printed in all books, including an index for one completed volume in the Scientific Series, was 2,694, and the total number of copies was 27,289. Twelve numbers of Chicago Natural History Museum *Bulletin* were printed, averaging 6,000 copies an issue. Other work of the Division of Printing included posters, price lists, "Museum Stories for Children" (Raymond Foundation), lecture schedules, Museum labels, post cards, Museum stationery, and specimen tags, totaling 850,292 impressions.

A list of titles in the publications series issued in 1949 by Chicago Natural History Museum Press follows:

DEPARTMENT OF ANTHROPOLOGY

FIELD, HENRY

The Anthropology of Iraq, The Lower Euphrates-Tigris Region, Anthropological Series, vol. 30, part 1, no. 2, 202 pages, 180 plates, 4 text figures, 2 maps

MARTIN, PAUL S., JOHN B. RINALDO, AND ERNST ANTEVS

Cochise and Mogollon Sites, Pine Lawn Valley, Western New Mexico, Fieldiana: Anthropology, vol. 38, no. 1, 232 pages, 24 text figures

SPOEHR, ALEXANDER

Majuro, A Village in the Marshall Islands, Fieldiana: Anthropology, vol. 39, 266 pages, 50 text figures, 11 maps

DEPARTMENT OF BOTANY

BARTRAM, EDWIN B.

Mosses of Guatemala, Fieldiana: Botany, vol. 25, 442 pages, 190 text figures

MACBRIDE, J. FRANCIS

Flora of Peru, Botanical Series, vol. 13, part 3, no. 2, 270 pages

STANDLEY, PAUL C., AND JULIAN A. STEYERMARK

Flora of Guatemala, Fieldiana: Botany, vol. 24, part 6, 440 pages

DEPARTMENT OF GEOLOGY

PATTERSON, BRYAN

A New Genus of Taeniodonts from the Late Paleocene, Fieldiana: Geology, vol. 10, no. 6, 2 pages

RICHARDSON, EUGENE S., JR.

A New Silurian Trilobite, Dalmanites Oklahomae, Fieldiana: Geology, vol. 10, no. 7, 4 pages, 1 text figure

Some Lower Huronian Stromatolites of Northern Michigan, Fieldiana: Geology, vol. 10, no. 8, 16 pages

ROY, SHARAT K., AND ROBERT K. WYANT

The Mapleton Meteorite, Geological Series, vol. 7, no. 7, 13 pages, 10 text figures

The Navajo Meteorite, Geological Series, vol. 7, no. 8, 15 pages

DEPARTMENT OF ZOOLOGY

BLAKE, EMMET R.

Distribution and Variation of Caprimulgus Maculicaudus, Fieldiana: Zoology, vol. 31, no. 26, 8 pages

A New Ant-Thrush from British Guiana, Fieldiana: Zoology, vol. 31, no. 31, 2 pages

DEPARTMENT OF ZOOLOGY (*continued*)

CONOVER, BOARDMAN

A New Species of Tinamus from Peru, Fieldiana: Zoology, vol. 31, no. 30, 4 pages, 2 text figures

DAVIS, D. DWIGHT

The Shoulder Architecture of Bears and Other Carnivores, Fieldiana: Zoology, vol. 31, no. 34, 21 pages, 8 text figures

DAVIS, D. DWIGHT, AND H. ELIZABETH STORY

The Female External Genitalia of the Spotted Hyena, Fieldiana: Zoology, vol. 31, no. 33, 7 pages

HAAS, FRITZ

Land and Fresh-Water Mollusks from Peru, Fieldiana: Zoology, vol. 31, no. 28, 16 pages, 1 text figure

HELLMAYR, CHARLES E., AND BOARDMAN CONOVER

Catalogue of Birds of the Americas, Zoological Series, vol. 13, part 1, no. 4, iv+358 pages

POPE, CLIFFORD H., AND SARAH H. POPE

Notes on Growth and Reproduction of the Slimy Salamander, Plethodon Glutinosus, Fieldiana: Zoology, vol. 31, no. 29, 12 pages, 6 text figures

RAND, A. L.

The Races of the African Wood-Dore, Turtur Afer, Fieldiana: Zoology, vol. 31, no. 35, 6 pages

SANBORN, COLIN C.

Bats of the Genus Micronycteris and Its Subgenera, Fieldiana: Zoology, vol. 31, no. 27, 20 pages

TRAYLOR, MELVIN A., JR.

Notes on Some Veracruz Birds, Fieldiana: Zoology, vol. 31, no. 32, 7 pages

ADMINISTRATIVE PUBLICATIONS

Report of the Director to the Board of Trustees for the Year 1948, 138 pages, 30 illustrations

PUBLIC RELATIONS

For an entire year the Museum was brought to the mind of every person who looked up a telephone number in *The Red Book, Chicago Classified Telephone Directory*. Through the courtesy of the Reuben H. Donnelley Corporation, directory publishers, and the Illinois Bell Telephone Company the Museum's name and a picture in colors of its north central façade appears on the front cover of the edition of *The Red Book* that was distributed in June, 1949. Inside the book in prominent page-one position appears the story of Chicago Natural History Museum. Inasmuch as millions of people constantly consult



The exhibit in Hall 29 showing the sumacs has been reconditioned and rearranged.

this directory and the number of their references to it in a year mounts up to millions upon millions, the powerful cumulative effect of this important publicity almost defies estimation. The use of this space, free of all charges, was graciously extended to the Museum by the Donnelley Corporation, and the Museum acknowledges this valuable contribution with deepest gratitude to the publishers and the sponsoring telephone company.

Publicity on all Museum activities was maintained at the usual pace by news releases, feature articles, and pictures. Direct news releases from the office of the Public Relations Counsel numbered 263. Additional publicity was obtained through issuing advance proofs of the Museum *Bulletin* to editors, through follow-ups by newspapers on released material, and through "tie-ins" with organizations whose scope of activity appropriately could be associated with exhibits or events in the Museum. Although the major emphasis was upon publicity in the metropolitan newspapers of Chicago, all releases were sent to community and foreign-language newspapers circulating

among residents of the various city neighborhoods and groups of various national origins, to the dailies and weeklies published in Chicago suburbs, and to newspapers in the Illinois-Wisconsin-Indiana-Michigan area beyond the city's suburban radius. The more important news from the Museum was carried by wire and mail news-services to newspapers throughout the United States, and in many instances international circulation was obtained.

For their interest in the Museum and their generous co-operation, acknowledgment is made to the publishers, executives, and editorial staffs of all the newspapers, large and small, that have contributed to keeping the public informed about the institution. Gratitude is expressed in particular to the *Chicago Daily News*, *Chicago Daily Sun-Times*, *Chicago Herald-American*, *Chicago Tribune*, Associated Press, United Press, International News Service, Science Service, Acme News Pictures, and the City News Bureau of Chicago.

The Museum continued to be represented each Saturday throughout the year with a series of stories on the "Children's Corner" program over radio station WCFL. Among other radio stations that offered their facilities to the Museum for special-feature programs, educational programs, and representation in general news broadcasts are WGN, WMBI, WMAQ, WIND, WBBM, WENR, WLS, WJJD, Columbia Broadcasting System, National Broadcasting Company, American Broadcasting Company, and Mutual Broadcasting System. The Museum was represented also in several television-newsreel programs and by two special-feature programs, on "Women's Magazine of the Air" over station WGN-TV, in which material from Museum exhibits was shown. Continuous contact between the Museum and its Members was maintained through the *Bulletin*, a monthly publication that gives coverage of all Museum activities and news both in articles and pictures.

The usual other publicity activities were maintained. Folders by the thousands telling of the Museum's exhibits and services were distributed through the co-operation of department stores, libraries, travel agencies, hotels, civic bureaus, and through seven other Chicago museums in other fields of science and art that advertise themselves in a jointly published folder. The Museum's lecture courses for adults and the children's programs presented by the Raymond Foundation were advertised by posters displayed in railroad stations and on suburban trains. This was made possible, without charge, by the co-operation of the Illinois Central System, Chicago and North Western Railway, the Chicago, Aurora and Elgin Railroad, and the Chicago Transit Authority.

CO-OPERATION WITH OTHER INSTITUTIONS

The laboratories and research collections of the Museum were open to visiting scientists, as in past years, and through interlibrary loan the resources of the Library of the Museum were available to other institutions. The Museum continued its co-operative educational plans with the University of Chicago, Northwestern University, Antioch College, and the School of the Art Institute of Chicago.

Classes from the School of the Art Institute, the Chicago Academy of Fine Arts, the Academy of Applied Arts, and the Institute of Design use the Museum exhibits regularly as a part of their class work. These students, ranging in age from children of six years to adults, can be seen sketching in the halls any day of the week, but they come in greatest number on Saturdays. They find that natural-history exhibits can take the place of living models and that the designs of primitive people offer many new ideas. Most of these

Classes from the School of the Art Institute of Chicago sketch in the Museum halls.



young students are from the School of the Art Institute, and results of their work are of such interest that for one month in the summer selected ceramic objects and sketches in water color, chalk, and oil are shown in a special exhibit in Stanley Field Hall of the Museum.

The Museum is a school in another sense when teachers-in-training come in organized classes from near-by colleges in their search for the community resources available to them in future teaching. As they use the Museum exhibits they observe other teachers and school classes studying in the Museum and thus learn what to do and what not to do in planning trips to museums and other similar institutions. Roosevelt College, Northwestern University, Chicago Teachers College, and Pestalozzi Froebel Teachers College make use of the Museum in this teaching project. Frequent use is made of Museum exhibits by individual students from Roosevelt College, with which the Museum co-operates by certifying attendance of the students at the Museum. The co-operative educational plan adopted in 1946 by this Museum and Antioch College, of Yellow Springs, Ohio, provides for the temporary employment by the Museum of successive groups of undergraduate students who alternate periods of study on the college campus with periods of work with pay. Under this plan ten young men and women were temporarily employed in 1949 by the Museum in its scientific departments and administrative offices.

The course in museology covering all details of curatorial duties in a museum was continued at the Museum by the staff of the Department of Anthropology in co-operation with the Department of Anthropology of the University of Chicago. Donald Collier, Curator of South American Ethnology and Archaeology, supervised a research course at the Museum in South American and Middle American archaeology for three graduate students from the University of Chicago. During the year Dr. Paul S. Martin, Chief Curator of Anthropology, Dr. Alexander Spoehr, Curator of Oceanic Ethnology, George I. Quimby, Curator of Exhibits, and Curator Collier gave lectures in their special fields at the University of Chicago, Northwestern University, and the Art Institute of Chicago. While in Mexico City in January both Chief Curator Martin and Curator Collier gave lectures for the Mexican Society of Anthropology and the National School of Anthropology. Dr. Martin also lectured at the Museum of New Mexico in Santa Fe in June and at the Cranbrook Institute of Science, Bloomfield Hills, Michigan, in December. He acted as consultant in anthropology for Wilson College, Chambersburg, Pennsylvania.

Dr. Theodor Just, Chief Curator of Botany, held a botanical seminar for faculty and students at the University of Michigan, Ann Arbor, in June, on aspects of plant morphology and evolution, conducted a class in the summer session at Northwestern University in biological evolution and modern society, and gave two botanical seminar talks in November at the University of Illinois, Urbana. Dr. José Cuatrecasas, Curator of Colombian Botany, spoke before the ecology group at the University of Chicago in November, and in January Dr. Julian A. Steyermark, Associate Curator of the Herbarium, was Biology Day speaker at William Jewell College, Liberty, Missouri. Classes in botany from the University of Illinois, the University of Chicago, and Valparaiso University, Valparaiso, Indiana, visited the Department of Botany at various times during the year and were conducted through the laboratories and herbaria.

The second section of the graduate course offered by the University of Chicago in vertebrate paleontology (reptiles and mammals) was given in the Museum during the winter quarter by Dr. Everett C. Olson, Associate Professor of Vertebrate Paleontology at the University of Chicago and Research Associate in Fossil Vertebrates at the Museum. During the course Bryan Patterson, Curator of Fossil



Ann Paton (left) and Anne Crawford, undergraduate students from Antioch College employed in the Department of Geology, check Museum photographs of meteorites with originals. The Navajo meteorite in the foreground is one of about 850 specimens.

Mammals, lectured on various mammalian orders. An advanced course in the cranial morphology of vertebrates was offered at the Museum by the University of Chicago during the autumn quarter under the direction of Research Associate Olson. Lectures and demonstrations were given in the Division of Vertebrate Paleontology, Department of Geology, and dissection was conducted in the laboratory of the Division of Vertebrate Anatomy, Department of Zoology, under the supervision of D. Dwight Davis, Curator of Vertebrate Anatomy. Dr. Rainer Zangerl, Curator of Fossil Reptiles, Curator Patterson, and Curator Davis participated with Dr. Olson in the instruction. Curator Zangerl and Curator Patterson served as Lecturers in the Department of Geology of the University of Chicago.

Lectures presented at other institutions by members of the staff of the Department of Zoology include the conduct of the course on arthropods at the University of Chicago, in the spring quarter, by Rupert L. Wenzel, Assistant Curator of Insects; a lecture before the zoology club of the University of Chicago by Curator Davis, who continued his association with the university as member of the Paleozoology Committee; a lecture before the ecology group of the university by Henry S. Dybas, Assistant Curator of Insects; two lectures before the undergraduate course in biology at the same university by Loren P. Woods, Curator of Fishes; and lectures at the University of Illinois by Curator Woods and Colin C. Sanborn, Curator of Mammals. A series of demonstrations and lectures by Dr. Fritz Haas, Curator of Lower Invertebrates, was held in the Museum for a small group of students of the University of Chicago. The work of Clifford H. Pope, Curator of Amphibians and Reptiles, at the Biological Station of the University of Virginia at Mountain Lake was essentially a co-operative arrangement in which the students who aided him profited from his instruction.

Scientists from other institutions continued to make use of the research materials and laboratories of the Museum. Adrian Digby, Assistant Keeper of the American Collections, British Museum, London, spent a week in the Museum in the course of his survey of storage and exhibition methods in museums of the United States and examined the Middle and South American anthropological collections. Dr. José Cruxent, director of the National Museum of Natural Sciences, Caracas, Venezuela, spent some time studying the South American anthropological collections as well as methods of exhibition in anthropology and zoology. Dr. Heinrich Doering, director of the Museum für Völkerkunde, Munich, studied the

Nazca ceramics from Peru; Miss Grace Denny, Professor of Textile Arts at the University of Washington, the Peruvian collection; Dr. Tullio Tentori, of the Royal Museum of Prehistory and Ethnography, Rome, the collection of bows and arrows from North and South America; Dr. Henri Lehmann, of the Musee de l'Homme, Paris, the Aztec clay figurines; Dr. S. V. Cammann, of the University Museum, Philadelphia, the collection of Tibetan paintings and the Chinese collection; and E. B. Sayles, of Arizona State Museum, techniques of exhibition. R. B. Inverarity, director of the recently established International Folk Art Museum in Santa Fe, New Mexico, spent several days in consultation with the staff of the Department of Anthropology on problems of museum architecture, storage, and exhibition and, in connection with his researches on Northwest Coast art, studied the Northwest Coast collection. S. A. Cohagan, director of a museum-planning group in Waterloo, Iowa, consulted with Chief Curator Martin and other staff members.

Many visiting botanists studied the collections in the Museum's Herbarium. Dr. Gabriel Gutiérrez, of Medellín, Colombia, studied Cinchona and Leguminosae; Dr. David D. Keck, of the Carnegie Institution of Washington, Division of Plant Biology, Stanford, California, grasses; Dr. John T. Buchholz, of the University of Illinois, conifers of the Pacific area; Dr. Carlos Muñoz, of the Ministry of Agriculture, Santiago, Chile, Chilean plants; Emil P. Kruschke, of the Milwaukee Public Museum, Crataegus; Jesús Idrobo, of the Instituto Ciencias Naturales, Bogatá, Colombia, Maranthaceae; and Dr. Grace C. Madsen and Dr. Chester S. Nielsen, both of Florida State University, Florida algae.

Dr. Frank E. Peabody, of the University of Kansas, made use of the collections and facilities of the Division of Vertebrate Paleontology, Department of Geology, in his study of the type of *Araeoscelis*. Dr. Charles A. Reed, of the College of Pharmacy, University of Illinois, worked on fossil carnivores; Dr. Walter Segall, of Northwestern University, continued his study of edentates; and Morris Skinner, of the Frick Laboratories, American Museum of Natural History, New York, investigated various fossil mammals. Dr. William E. Swinton, of the British Museum (Natural History), London, who was in the United States to study museum methods in many institutions, found time while in the Museum to investigate a few dinosaurs, his particular interest.

The collections of the Department of Zoology in all of its Divisions were consulted by numerous visitors for specific studies, supplementing the large use of the collections by loan to other institutions.

Of especial interest were consultations with Dr. William A. Craft, director of the Swine Breeding Laboratory at Ames, Iowa, and Colonel Edward N. Wentworth, of the Armour Livestock Bureau, with regard to the living species of wild pigs and their relation to problems in the domestic breeds. Dr. Robert Mertens, director of the Senckenberg Museum in Frankfort, Germany, who as one of the University of Frankfort-University of Chicago exchange of staff was invited to make the Museum his headquarters while in Chicago, spent two months working on the collections in the Division of Reptiles and engaging in local field work with members of the staff. Use of the laboratory and collections of the Division of Anatomy during the year by various persons engaged in medical research was a gratifying demonstration of the usefulness of this Division to a wide field outside the Museum. Among those making such studies were Dr. E. L. Du Brul, of the College of Dentistry, University of Illinois (architecture of the skull in rabbits); Waldemar Meister, Chicago College of Osteopathy (microarchitecture of bone); Arne Bjork, of Västerås, Sweden (prognathism in primate skulls); Dr. C. O. Bechtol, of Oakland, California (anatomy of the shoulder); and H. F. Moseley, Toronto (anatomy of the shoulder in primates).

The Museum co-operated with Dr. Willard F. Libby, of the Institute for Nuclear Studies, University of Chicago, in his development of the carbon-14 method of dating archaeological, paleontological, and paleobotanical remains. A number of wood samples of contemporary age from various parts of the world furnished to Dr. Libby from the Museum's anthropological and botanical collections were used in a world assay of organic materials that proved that the carbon-14 content of contemporary organic matter is the same regardless of the climate, altitude, and latitude of the place of origin. A sample of planking from the mortuary boat of King Sesostris III of Egypt, who died about 1849 B.C., was furnished to Dr. Libby as one of a half-dozen ancient Egyptian and Mesopotamian specimens of known age used to test further the carbon-14 method. The carbon-14 date for this sample was 1751 ± 400 B.C., the deviation from the known date, which is not absolutely accurate, thus falling well within the range of the calculated error. Dr. J. R. Arnold, of the Institute for Nuclear Studies and the carbon-14 project, visited the Museum's archaeological camp in New Mexico in order to co-operate with Chief Curator Martin on the techniques of gathering suitable samples to be used in carbon-14 dating of archaeological materials. He also wished to obtain first-hand knowledge of the most advanced methods of doing archaeological work.



Interested grammar-school students listen to their teacher's story of the panda.

Students of African ethnology and physical anthropology, who came to the Museum mainly from the Air University Libraries, Maxwell Air Force Base, Alabama, and the dental schools of the University of Illinois and Northwestern University, were given assistance in their work. Miss Vivian Broman, of the University of Chicago, undertook the classification of the Maya collection in terms of the phase or period names in current use in Maya archaeology; Miss Rose Lilien worked with the Museum's collection of Peruvian clay figurines in preparing a thesis for the degree of master of arts at Columbia University; and Philip Dark, graduate student at Yale University, made a study of the Djuka collection from

Dutch Guiana for a thesis on Djuka art. Miss Margaret Murley, graduate student in botany at Northwestern University, wrote her doctoral dissertation on seeds of the Cruciferae of eastern United States under the supervision of Chief Curator Just, and Nicholas Hotton III, a graduate student in geology at the University of Chicago, worked on the jaw apparatus of Xenecanth fishes under the direction of Research Associate Olson. Two graduate students at the University of Chicago, William J. Beecher, working on the functional anatomy of birds, and Robert F. Inger (of the staff), working on the Philippines Amphibia, were assigned to the general supervision of Chief Curator Schmidt, as Lecturer in the Department of Zoology of the University of Chicago. Much of the work of Robert Sokol, University of Chicago Museum Fellow in Zoology, studying plant lice under the direction of Research Associate Alfred E. Emerson, was done in the Museum's Division of Insects.

Several staff members took part in radio and television programs during the year. Chief Curator Martin gave an interview-talk for the Voice of America radio program, which was broadcast to twenty-eight countries in Europe, Asia, and Latin America. He participated in a roundtable program on archaeology of the Southwest for the radio station in Santa Fe, New Mexico, was interviewed for the 20th Century Limited radio program concerning the 1949 Southwest Archaeological Expedition, and, with Curator Quimby, gave an interview over radio station WMBI on the Museum's new Hall of Indian America (Hall 4). Chief Curator Schmidt made a transcription at the WMAQ radio studios for the radio station in Norfolk, Virginia, on the nature of a natural-history museum. Curator Woods appeared on a television program dealing with the Marineland aquarium at St. Augustine, Florida, and acted as consultant to Coronet Films in connection with short educational films.

ACTIVITIES OF STAFF MEMBERS IN SCIENTIFIC SOCIETIES

Dr. Paul S. Martin, Chief Curator of Anthropology, Dr. Alexander Spoehr, Curator of Oceanic Ethnology, George I. Quimby, Curator of Exhibits, and Dr. John B. Rinaldo, Assistant in Archaeology, attended the annual meetings of the Society for American Archaeology and the Central States Branch of the American Anthropological Association held in Bloomington, Indiana, in May. Donald Collier, Curator of South American Ethnology and Archaeology, was chairman of the program committee of the first-named organization

and a member of the program committee of the second. Chief Curator Martin was elected a member of the Executive Council of the Society for American Archaeology and a member of the Council of the American Anthropological Association, and Curator Quimby was elected president of the Central States Branch.

In August Chief Curator Martin, Dr. Rinaldo, and Miss Elaine Bluhm, assistant in the Department of Anthropology, attended the Southwestern Archaeological Conference in Santa Fe, New Mexico, for which Dr. Martin was a member of a planning committee of three. Dr. Martin also visited Gila Pueblo, Globe, Arizona, for a conference on Southwestern pottery. As representative from the American Anthropological Association, Curator Collier attended the annual meeting of the Division of Anthropology and Psychology of the National Research Council, held in Washington, D.C., in May. He continued to serve as a member of the Committee on Carbon-14 Dating of the American Anthropological Association and during the year attended three meetings of the committee, two in Chicago and one in New York. In September he attended in New York the annual meetings of the Institute of Andean Research, the Viking Fund seminars, and, as official representative of the Museum, the International Congress of Americanists. Curator Quimby also attended the seminars and the Congress, to which his expenses were generously defrayed by the Viking Fund, Inc.

Dr. Theodor Just, Chief Curator of Botany, Dr. José Cuatrecasas, Curator of Colombian Botany, Dr. Francis Drouet, Curator of Cryptogamic Botany, Dr. Hugh C. Cutler, Curator of Economic Botany, Dr. Julian A. Steyermark, Associate Curator of the Herbarium, and Dr. Hanford Tiffany and Donald Richards, Research Associates in Cryptogamic Botany, attended the meetings of the American Association for the Advancement of Science in New York in December. Chief Curator Just reported to the Paleobotanical Section of the Botanical Society of America on the activities of the Committee on Paleobotanical Nomenclature, of which he is chairman. He served in 1949 as chairman of the membership committee of the Society for the Study of Evolution and was elected secretary of the society for 1950-52. Curator Cuatrecasas was appointed a member of the organization committee of the Third South American Botanical Congress, to be held in Bogatá, Colombia, in 1953, and Associate Curator Steyermark was elected secretary of the Systematic Section of the Society of Plant Taxonomists. Research Associate Tiffany as president presided over the meetings of the Phycological Society of America, and Research Associate Richards was elected chairman

of the nominating committee of the American Bryological Society. During the year Associate Curator Steyermark was elected to honorary membership in Friends of Our Native Landscape, re-elected president of the Barrington (Illinois) Natural History Society, and re-appointed delegate from the Museum to the Conservation Council of Chicago.

Bryan Patterson, Curator of Fossil Mammals, and Dr. Albert A. Dahlberg, Research Associate in Fossil Vertebrates, attended a conference on the fossil man-apes, *Australopithecinae*, of South Africa, held in New York in August under the sponsorship of the Viking Fund, Inc. Dr. Rainer Zangerl, Curator of Fossil Reptiles, Dr. Robert H. Denison, Curator of Fossil Fishes, Dr. Everett C. Olson, Research Associate in Fossil Vertebrates, and Curator Patterson attended the annual meetings of the Society of Vertebrate Paleontology and the Geological Society of America held in El Paso, Texas, in November and gave reports on work in progress. Research Associate Olson served as secretary-treasurer of the Society of Vertebrate Paleontology throughout the year.

Emmet R. Blake, Associate Curator of Birds, and Melvin A. Traylor, Jr., Research Associate, attended the 1949 meeting of the American Ornithologists' Union at Buffalo. Dr. Austin L. Rand, Curator of Birds, is a member of the Council and chairman of the Brewster Award Committee of this society. Curator Rand and Associate Curator Blake served on the board of directors of the Illinois Audubon Society, of which Dr. R. M. Strong, Research Associate in Anatomy, is president. Rupert L. Wenzel, Assistant Curator of Insects, was president in 1949 of the Chicago Entomological Society, and Dr. Fritz Haas, Curator of Lower Invertebrates, was elected president of the American Malacological Union. Karl P. Schmidt, Chief Curator of Zoology, continued as treasurer of the Society for the Study of Evolution. As representative of the American Society of Ichthyologists and Herpetologists on the National Research Council and to the American Institute of Biological Sciences he attended the annual meetings in May of both Council and Institute, and as delegate of the Museum and of the National Research Council he attended the Seventh Pacific Science Congress in New Zealand in February. He is a member of the Pacific Science Board, the committee of the National Research Council charged with the screening of Fulbright Fund applications in zoology, and the Committee for Research of the Chicago Zoological Society, and was elected a corresponding member of the Zoological Society of London.

Publications of staff members during 1949 other than those issued by the Museum Press included the following titles:

DEPARTMENT OF ANTHROPOLOGY

COLLIER, DONALD

Review of *A Bibliography of Ancient Man in California* (by Robert F. Heizer), in *American Anthropologist*, vol. 51, no. 3, p. 497

Review of *Boletin Bibliografico de Anthropologia Americana, Vol. 10*, in *American Anthropologist*, vol. 51, no. 3, p. 498

Review of *Excavations in the Cuenca Region, Ecuador* (by Wendell C. Bennett), in *American Antiquity*, vol. 15, no. 2, pp. 168-169

Review of *Handbook of Latin American Studies, No. 11*, in *American Anthropologist*, vol. 51, no. 3, p. 497

HAMBLY, WILFRID D.

Talking Animals (Washington, D.C.: The Associated Publishers, Inc.), x+100 pages, illustrated by James A. Porter

MARTIN, PAUL S., GEORGE I. QUIMBY, AND DONALD COLLIER

Indians before Columbus, Twenty Thousand Years of North American History Revealed by Archeology (University of Chicago Press [1947, third impression 1949]), xxiii+582 pages, 122 illustrations

QUIMBY, GEORGE I.

"Archaeology, Western Hemisphere," in *1949 Britannica Book of the Year, A Record of . . . Events of 1948* (Chicago: Encyclopaedia Britannica, Inc.), pp. 58-60

"A Hopewell Tool for Decorating Pottery," *American Antiquity*, vol. 14, no. 4, p. 344

RINALDO, JOHN B.

Review of *An Early Pit House Village of the Mogollon Culture, Forestdale Valley, Arizona* (by Emil W. Haury), in *American Antiquity*, vol. 15, no. 1, p. 66-67

SPOEHR, ALEXANDER

Review of *Fijian Village* (by Buell Quain), in *Social Forces*, vol. 27, no. 4, pp. 440-441

"The Generation Type Kinship System in the Marshall and Gilbert Islands," *Southwestern Journal of Anthropology*, vol. 5, no. 2, pp. 107-116

Review of *Social Organization* (by Robert H. Lowie), in *American Sociological Review*, vol. 14, no. 1, p. 175

"Southwestern Pithouses," *American Antiquity*, vol. 15, no. 1, p. 55

DEPARTMENT OF BOTANY

CUATRECASAS, JOSÉ

"Una Nueva Fruta Tropical Americana: *El Borojó*," *Serie Botanica Aplicada, Departamento del Valle del Cauca, Republica de Colombia*, vol. 2, no. 5, pp. 474-481

CUTLER, HUGH C.

"Races of Maize in South America," *Revista de Agricultura*, no. 4, pp. 18-29; no. 5, pp. 3-28



Allison-Lighthall

Delegates attending the National Congress of 4-H Clubs in Chicago look over the display of picture post cards in the Museum Book Shop during their annual visit.

DEPARTMENT OF BOTANY (*continued*)

JUST, THEODOR

"The Nomenclature of Fossil Plants," *American Journal of Botany*, vol. 36, no. 1, pp. 28-32

"Some Aspects of Plant Morphology and Evolution," in *Genetics, Paleontology, and Evolution* (Princeton University Press), pp. 90-100

SHERFF, EARL E.

"Introduction" to "Symposium on Botanical Nomenclature," *American Journal of Botany*, vol. 36, no. 1, pp. 1-4

"Miscellaneous Notes on Dicotyledonous Plants," *American Journal of Botany*, vol. 36, no. 7, pp. 499-511

"A New Variety of *Gnaphalium sandwicensium* Gaud. in the Hawaiian Islands," *Lloydia*, vol. 11, no. 4, p. 309

"Some New or Otherwise Noteworthy Dicotyledonous Plants from the Hawaiian Islands," *Occasional Papers of Bernice P. Bishop Museum*, vol. 22, no. 1, pp. 1-25

STEYERMARK, JULIAN A.

"Effects of Damming Ozark Springs," *Missouri Botanical Garden Bulletin*, vol. 37, no. 2, pp. 41-48

"Fate of Missouri's Forests," *Missouri Botanical Garden Bulletin*, vol. 37, no. 5, pp. 126-127

"*Lindera melissaeifolia*," *Rhodora*, vol. 51, no. 608, pp. 153-161

"New Missouri Plant Records (1946-1948)," *Rhodora*, vol. 51, no. 606, pp. 115-119

"The Persimmon Tree," *Missouri Botanical Garden Bulletin*, vol. 37, no. 9, pp. 192-195

STEYERMARK, JULIAN A. (*continued*)

"Plants New to Illinois or Chicago Area in Illinois," *Rhodora*, vol. 51, no. 607,

pp. 147-148

"Plant Survey in Fountain Grove Reveals Rare Shrub," *Missouri Conservationist*, vol. 10, no. 4, pp. 14-15

DEPARTMENT OF GEOLOGY

PATTERSON, BRYAN

"Rates of Evolution in Taeniodonts," in *Genetics, Paleontology, and Evolution* (Princeton University Press), pp. 243-278

ROY, SHARAT K.

"Gem Collection of Chicago Natural History Museum," *Gems and Gemology*, vol. 6, no. 4, pp. 99-103

DEPARTMENT OF ZOOLOGY

BAUER, MARGARET JEAN

Animal Babies (Chicago and New York: M. A. Donohue and Company), 88 pages, 12 color plates, 58 marginal drawings

BLAKE, EMMET R.

"Booby's Beak Imbedded in Black Marlin's Back," *Auk*, vol. 66, p. 78

"First American Records of Tropical American Birds," *Natural History Miscellanea*, no. 42, pp. 1-3

"*Ictinia mississippiensis* Collected in Paraguay," *Auk*, vol. 66, p. 82

"The Nest of the Colima Warbler in Texas," *Wilson Bulletin*, vol. 61, pp. 65-67, 1 photograph

CONOVER, BOARDMAN

"A New Race of *Rallus nigricans* from Colombia," *Proceedings of the Biological Society of Washington*, vol. 62, pp. 173-174

DAVIS, D. DWIGHT

"Comparative Anatomy and the Evolution of Vertebrates," in *Genetics, Paleontology, and Evolution* (Princeton University Press), pp. 64-89

HAAS, FRITZ

"An Overlooked Chinese Unionid," *Nautilus*, vol. 63, p. 70

"Some Land and Freshwater Mollusks from Guatemala," *Nautilus*, vol. 62, pp. 136-138

HERSHKOVITZ, PHILIP

"Generic Names of the Four-eyed Pouch Opossum and the Woolly Opossum (Didelphidae)," *Proceedings of the Biological Society of Washington*, vol. 62, pp. 11-12

"Mammals of Northern Colombia, Preliminary Report No. 4: Monkeys (Primates), with Taxonomic Revisions of Some Forms," *Proceedings of the United States National Museum*, vol. 98, pp. 323-427, 3 figures

"Mammals of Northern Colombia, Preliminary Report No. 5: Bats (Chiroptera)," *Proceedings of the United States National Museum*, vol. 99, pp. 429-454, 1 figure

"Technical Names for the Fallow Deer," *Journal of Mammalogy*, vol. 30, p. 94

"Technical Names of the African Muishond (Genus *Zorilla*) and the Colombian Hog-nosed Skunk (Genus *Conepatus*)," *Proceedings of the Biological Society of Washington*, vol. 62, pp. 13-16

DEPARTMENT OF ZOOLOGY (*continued*)

POPE, CLIFFORD H.

Review of *Bibliography of Animal Venoms* (by R. W. Harmon and C. B. Pollard), in *Copeia*, 1949, p. 83

"A New Species of Salamander (*Plethodon*) from Southwestern Virginia," *Natural History Miscellanea*, no. 47, pp. 1-4 [with J. A. Fowler]

"The Salamander *Desmognathus quadramaculatus amphileucus* Reduced to Synonymy," *Natural History Miscellanea*, no. 44, pp. 1-4

RAND, AUSTIN L.

"Altitudinal Variation in an African Grass Warbler (*Cisticola hunteri Shelley*)," *Natural History Miscellanea*, no. 43, pp. 1-8

"Distributional Notes on Canadian Birds," *Canadian Field-Naturalist*, vol. 62, pp. 175-180

Review of *Ecologic Races of Song Sparrows in the San Francisco Bay Region: Part I, Habitat and Abundance; Part II, Geographical Variation* (by Joe T. Condor Marshall), in *Auk*, vol. 66, pp. 295-296

Review of *The Parasitic Cuckoos of Africa* (by Herbert Friedmann), in *Scientific Monthly*, vol. 49, pp. 67-69

"Variation in *Dumetella carolinensis*," *Auk*, vol. 66, pp. 25-28 [with Melvin A. Traylor, Jr.]

SANBORN, COLIN CAMPBELL

"Cavies of Southern Peru," *Proceedings of the Biological Society of Washington*, vol. 63, pp. 133-134

"Extension of the Range of the African Bat, *Myotis bocagei cupreolus* Thomas," *Journal of Mammalogy*, vol. 30, p. 315

"Hoy's Pygmy Shrew in Illinois," *Natural History Miscellanea*, no. 36, pp. 1-2 [with Douglas E. Tibbitts]

"Mammals from the Rio Ucayali, Peru," *Journal of Mammalogy*, vol. 30, pp. 277-288, 1 figure

"Mexican Records of the Bat, *Centurio senex*," *Journal of Mammalogy*, vol. 30, pp. 198-199

"A New Species of Rice Rat (*Oryzomys*) from the Coast of Peru," *Publicaciones del Museo de Historia Natural "Javier Prado," Lima, Peru*, Ser. A., Zoologica, Año 1, no. 3, pp. 1-4

"Notes on the Caroline Sheath-tailed Bat (*Emballonura sulcata* Miller)," *Natural History Miscellanea*, no. 48, pp. 1-2

"The Status of *Akodon andinus polius* Osgood," *Journal of Mammalogy*, vol. 30, p. 315

SCHMIDT, KARL P.

Review of *Boy's Book of Snakes, How to Recognize and Understand Them* (by Percy A. Morris), in *Copeia*, 1949, p. 83

Review of *East of the Andes and West of Nowhere, A Naturalist's Wife in Colombia* (by Nancy Bell Bates), in *Copeia*, 1949, pp. 302-303

Review of *High Jungle* (by William Beebe), in *Copeia*, 1949, p. 303

Review of *Naturalist's South Pacific Expedition: Fiji* (by Otto Degener), in *Scientific Monthly*, vol. 49, p. 344

Principles of Animal Ecology (Philadelphia: W. B. Saunders Company), vii+837 pages, 263 figures [with W. C. Allee, Alfred E. Emerson, Orlando Park, and Thomas Park]

TRAYLOR, MELVIN A., JR.

"The Prediction of Longshore Currents," *Transactions of the American Geophysical Union*, vol. 30, pp. 337-345

At the annual meeting of the American Association of Museums held in Chicago in May the Director of this Museum was elected a member of the Council, governing board of the Association. Miss Miriam Wood, Chief of the James Nelson and Anna Louise Raymond Foundation, spoke on teaching botany to children before the Children's Museum Section of the Association, which met in the lecture hall of this Museum, and Mrs. Meta P. Howell, Librarian of the Museum, read a paper on exchange of serial publications among scientific organizations before the Librarians' Section, which met at the Oriental Institute. Mrs. Eunice M. Gemmill, Associate Librarian, and Mrs. Howell attended the Midwinter Conference of the American Library Association in Chicago in January and meetings during the year of the American Library Association, Chicago Library Club, Illinois Regional Group of Cataloguers, and Special Libraries Association.

Several staff members of the Museum serve in editorial capacities on scientific journals. Upon his departure in October for field work on Saipan Curator Spoehr resigned the book-review editorship of the *American Anthropologist*, and Curator Collier, who continued as contributing editor of *El Palacio*, was appointed to the position. Chief Curator Just is editor of *Lloydia* and on the editorial board of *Ecology* and *Evolution*, and Research Associate Sherff is a member of the editorial committee of *Brittonia*. Curator Zangerl continued as regional editor of the news bulletin of the Society of Vertebrate Paleontology. Chief Curator Schmidt is herpetological editor of *Copeia*, section editor of *Biological Abstracts* for amphibians and reptiles, and consulting editor of *American Midland Naturalist*.

One of the busiest spots in the Museum is the children's lunchroom, where tables and benches are provided for the hundreds of school children who bring lunches.



THE BOOK SHOP

Sales in the Museum's Book Shop totaled \$29,614.53, of which mail orders amounted to \$2,187.98. The Book Shop is the exclusive distributor of a number of items, including the book *Heads and Tales* by Malvina Hoffman, the "Map of Mankind" (a chart and pamphlet that deal with the world distribution of racial types, both illustrated with photographs of Hoffman sculptures), and certain publications of the Geographic Society of Chicago. During the year the Museum, through the Book Shop, undertook to act as distributor for the publications of the late Dr. A. J. Grout, well-known authority on mosses, by taking over from the executor of his estate the entire stock of his books. In acting as agent, the Museum is chiefly concerned with making these fundamental reference works and textbooks available to students and research workers in the special field of cryptogamic botany. A reprint of eight bird plates from the portfolio of paintings by Louis Agassiz Fuertes, *Abyssinian Birds and Mammals*, a Museum publication long out of print, was placed on sale in the Book Shop late in the year. The sale of "Museum Stories for Children," written by members of the Raymond Foundation staff, continued as an important activity. Orders received by mail accounted for the sale of 30,589 copies of these stories.

CAFETERIA

The Museum again achieved new records in attendance in its cafeteria and lunchroom. In all, 256,179 people were served, an increase of almost 7,000 over last year, which marks the first time that the service has reached more than a quarter of a million people. Total sales, however, were slightly less than in the preceding year. Alterations in kitchen and serving equipment have speeded up service, resulting in considerably less delay to customers.

MAINTENANCE, CONSTRUCTION, AND ENGINEERING

Tuckpointing and masonry repairs in all light courts of the Museum building were completed during the year. The lower marble steps at the North Entrance were reset where necessary and tuckpointed, and a black top-covering was put on the north and west-door terraces and over the shipping and boiler rooms to re-establish smooth walking surfaces and to waterproof the areas beneath them. Lightning-rod points were installed on high points of the roof and stack. Extensive measures for the extermination of termites were continued.

Moving of exhibits and exhibition cases from Hall B on the ground floor to Hall 4 (Indian America) on the first floor was completed. Larger poison pans were installed in the cases in eight of the exhibition halls to provide for the use of a bulkier insecticide that would eliminate any possibility of fire or explosion hazard. A room on the third floor in the Department of Botany was remodeled for use as a plant-poisoning room. A much-needed addition was the installation in the photography storage room of a large air-conditioning unit that allows valuable film negatives to be stored under the ideal conditions of temperature and humidity necessary for safe preservation of all photographic emulsions.

Lighting of exhibition cases was improved in several exhibition halls, and Hall 4 was rewired to accommodate the exhibition cases moved from Hall B. Installation of fluorescent lighting was continued, and maintenance work was done on electrical fixtures and plumbing as needed during the year. The heating plant was completely renovated. One of the four old boilers was rebuilt for use in emergency and three were replaced with two new boilers of larger capacity. This improvement necessitated wrecking three old boilers, tearing out and replacing the boiler-room floor and foundations, and contracting for plumbing, electrical work, pipe covering, steam fitting, and brick work. Fires were laid under the rebuilt boiler the last of September to dry out the brick work, and steam was furnished with this boiler until completion of the new units, which were placed in service about the middle of November. An automatic firing-control panel and a new feed water-heater tank were installed. The steam pressure has been raised from eighty to one hundred pounds, with the result that more even temperature can be maintained throughout the building than was possible with the old boilers. Under contracts in force, 13,443,747 pounds of steam were furnished to the John G. Shedd Aquarium and 14,222,792 pounds to the Chicago Park District, a total of 27,666,539 pounds delivered.

In the pages that follow are submitted the Museum's financial statements (1948, 1949), attendance statistics and door receipts (1948, 1949), list of accessions, list of Members, articles of incorporation, and amended by-laws.

CLIFFORD C. GREGG, *Director*
Chicago Natural History Museum

COMPARATIVE FINANCIAL STATEMENTS

FOR YEARS 1948 AND 1949

INCOME	1949	1948
Endowment funds.....	\$708,582.49	\$655,156.94
Funds held under annuity agreement.....	16,250.00
Life Membership Fund.....	9,723.03	8,957.65
Associate Membership Fund.....	12,891.34	11,739.92
Chicago Park District.....	134,003.04	118,038.05
Annual and Sustaining Memberships.....	19,125.00	18,525.00
Admissions.....	30,694.75	32,211.25
Sundry receipts.....	23,927.77	26,461.23
Contributions, general purposes.....	886.83	641.00
Contributions, special purposes (expended <i>per contra</i>).....	25,927.67	117,590.21
Special funds—part expended for purpose designated (included <i>per contra</i>).....	17,894.10	13,935.24
	\$983,656.02	\$1,019,506.49
 EXPENDITURES		
Collections.....	\$ 41,417.37	\$ 28,478.96
Operating expenses capitalized and added to collections.....	67,114.92	55,036.99
Expeditions.....	42,645.34	49,178.50
Furniture, fixtures, etc.....	11,116.06	110,036.31
Wages capitalized and added to fixtures.....	4,718.70	2,981.16
Pensions and group insurance	74,830.94	68,860.25
Departmental expenses.....	89,171.29	79,212.61
General operating expense.....	519,799.74	523,762.48
Building repairs and alterations.....	130,701.90	74,807.37
Annuity on contingent gift	16,250.00
	\$981,516.26	\$1,008,604.63
Balance.....	\$ 2,139.76	\$ 10,901.86

The N. W. Harris Public School Extension

	1949	1948
Income from endowments...	\$ 18,328.29	\$ 17,493.74
Expenditures.....	21,932.94	19,649.22
Deficit.....	\$ 3,604.65	\$ 2,155.48

COMPARATIVE ATTENDANCE STATISTICS AND DOOR RECEIPTS

FOR YEARS 1948 AND 1949

	1949	1948
Total attendance.....	1,145,359	1,134,643
Paid attendance.....	122,779	128,845
Free admissions on pay days:		
Students.....	26,923	26,721
School children.....	79,487	71,285
Teachers.....	2,974	2,672
Members.....	455	402
Service men and women.....	1,380	1,581
Special meetings.....	2,096	871
Admissions on free days:		
Thursdays (51).....	145,902	(52) 143,502
Saturdays (52).....	302,946	(51) 274,785
Sundays (51).....	460,417	(52) 483,979
Highest attendance on any day (September 4).....	11,859	(July 4) 14,609
Lowest attendance on any day (December 16).....	169	(March 3) 165
Highest paid attendance (September 5).....	3,739	(July 5) 3,616
Average daily admissions (363 days)....	3,155	(364 days) 3,117
Average paid admissions (209 days)....	587	(209 days) 616
<hr/>		
Number of guides sold.....	22,207	23,810
Number of articles checked.....	33,763	40,836
Number of picture post cards sold.....	168,862	241,776
Sales of publications, both scientific and popular, and photographs.....	\$10,387.98	\$11,898.41

ACCESSIONS, 1949

DEPARTMENT OF ANTHROPOLOGY—ACCESSIONS

BAHR, A. W., Montreal, Canada: 1 stone Buddhist head—China (gift in memory of Dr. Berthold Laufer).

CHICAGO NATURAL HISTORY MUSEUM:

Collected by Donald J. Lehmer (Mexican [Sonora] Archaeological Expedition, 1949): stone implements and potsherds—Sonora, Mexico.

Collected by Dr. Paul S. Martin (Southwest Archaeological Expedition, 1949): 170 specimens, including stone and bone artifacts, shell ornaments, pottery vessels and sherds, 1 clay figurine, and 3 fragmentary skeletons—near Reserve, New Mexico.

Purchase: 4 Indian peace medals, 174 arrowheads, 11 bone awls, 1 bone flesher, 1 antler hoe, 38 stone scrapers, 1 stone celt, 1 stone blade, 6 stone knives, 5 arrow smoothers, 1 stone club-head, 1 stone ball, 1 stone amulet, and 104 potsherds—near Pierre, South Dakota.

FIELD, DR. HENRY, Washington, D.C.: 2 flint flakes—Spain (gift).

HAEGER, E. A., Palos Heights, Illinois: 1 carved wood statue—Tabar Island, Melanesia (gift).

HELLER, DR. HILDA H., Arequipa, Peru: 1 stone club-head, probably Inca—near Huanuco, Peru (gift).

LARSEN, GLADYS, Chicago: 3 flint axes—Denmark (gift).

LOUISIANA STATE UNIVERSITY, Baton Rouge: about 5,000 specimens, includ-

ing some restorable pots, artifacts of stone, bone, shell, and fired clay, and many potsherds, representing prehistory of the Lower Mississippi Valley—Louisiana (gift).

MALLORY, NIVVIE G., Chicago: 1 Indian mortar—near Cambridge, Nebraska (gift).

MILLER, B. T., Logansport, Indiana: 18 ethnological specimens—Geelvink Bay, Dutch New Guinea (gift).

MORRILL, MRS. W. P., Chicago: 50 stone axes and broken arrowheads (gift).

NASH, MRS. L. BYRON, Highland Park, Illinois: 74 Polynesian ethnological specimens, 1 from Samoa, and 1 case of koa wood—Hawaii and Samoa (gift).

PUTNAM, P., Belgian Congo, Africa: 1 Bantu mask of wood, 1 Bantu basket—Belgian Congo (gift).

SOGGE, ESTHER M., Oak Park, Illinois: 3 pots, 1 drill, 1 bone awl, 6 projectile points—Spur Lake, New Mexico (gift).

TULLY, COLONEL J. K., Evanston, Illinois: 1 whaling harpoon, 2 bone arrowheads—Nome, Alaska (gift).

WARREN, ALLYN D., Chicago: 1 wood carving of Vishnu mounted on Garuda, 1 carved wood plaque—Bali, Dutch East Indies (gift).

WHEELER, MRS. R. C., Chicago: 1 shrunken head—Ecuador (gift).

DEPARTMENT OF BOTANY—ACCESSIONS

ANDERSON, DR. EDGAR, St Louis: 3 plant specimens (gift).

ANDRADE, DR. HUMBERTO DE, Fortaleza, Brazil: 5 specimens of Carnauba wax (gift).

APOLINAR-MARIE, BROTHER, Bogotá, Colombia: 23 specimens of Colombian plants (gift).

ARRAZÁGOLA, RAOUL, Buenaventura, Colombia: 15 boards for exhibits (gift).

BARKLEY, DR. FRED A., Medellín, Colombia: 83 specimens of algae (gift).

BAUER, BILL, Webster Groves, Missouri: 1 plant specimen (gift).

BENNINGHOFF, DR. W. S., Washington, D.C.: 4 specimens of soil algae (gift).

BERMÚDEZ, DR. LUIS A., Cali, Colombia: 60 specimens of Colombian plants (exchange).

BEUTTAS, PAUL J., Highland Park, Illinois: 1 cryptogamic specimen (gift).

BLOMQUIST, DR. HUGO L., Durham, North Carolina: 2 cryptogamic specimens (gift).

BLUM, DR. JOHN L., Buffalo: 153 specimens of algae (gift).

BOLD, DR. HAROLD C., Nashville, Tennessee: 1 cryptogamic specimen (gift).

BOTANICAL MUSEUM, HARVARD UNIVERSITY, Cambridge, Massachusetts: 135 specimens of Colombian plants (gift).

BOTANISCHE STAATSANSTALT, Munich, Germany: 56 plant specimens, 189 cryptogamic specimens (exchange).

BOWDEN, DR. WRAY M., Ottawa, Ontario, Canada: 6 plant specimens (gift).

BRANNON, DR. MELVIN A., Gainesville, Florida: 70 specimens of algae (gift).

BREEN, DR. RUTH O. Schornhurst, Tallahassee, Florida: 11 specimens of marine algae (gift).

BRENCKLE, DR. J. F., Mellette, South Dakota: 170 plant specimens (exchange).

BRIEGER, DR. F. G., Piracicaba, Brazil: 50 ears of Indian maize (gift).

BRITISH GUIANA FOREST DEPARTMENT, Georgetown: 12 boards of local lumber for exhibit (gift).

BUCHHOLZ, DR. JOHN T., Urbana, Illinois: 2 photographic prints, 2 specimens of Kauri gum (gift).

CALIFORNIA, UNIVERSITY OF, DEPARTMENT OF BOTANY, Berkeley: 148 specimens of Colombian plants, 63 specimens of algae (gift); 376 plant specimens, 250 cryptogamic specimens (exchange).

CALIFORNIA ACADEMY OF SCIENCES, San Francisco: 1 specimen of *Metasequoia* (exchange).

CÁRDENAS, DR. MARTÍN, Cochabamba, Bolivia: 276 specimens of Bolivian plants (gift).

CASCARD, BEN, Chicago: 8 specimens of fungi (gift).

CASTAÑEDA, DR. RAFAEL ROMERO, Bogotá, Colombia: 33 specimens of Bolivian plants (exchange).

CAYLOR, DR. R. L., Cleveland, Mississippi: 22 specimens of algae (gift).

CENTRAL EXPERIMENTAL FARM, Ottawa, Ontario, Canada: 94 specimens of Canadian plants (exchange).

CHANDLER, ALBERT, Kirkwood, Missouri: 1 plant specimen (gift).

CHAPMAN, DR. V. J., Auckland, New Zealand: 11 specimens of algae (gift).

CHASE, VIRGINIUS H., Peoria, Illinois: 2 plant specimens (gift); 1,018 plant specimens (exchange).

CHICAGO NATURAL HISTORY MUSEUM: Collected by Dr. Francis Drouet and others (Gulf States Botanical Expedition, 1948-49): about 15,000 specimens of cryptogams.

Collected by Rupert L. Wenzel and Rodger D. Mitchell (Guatemalan Zoological Expedition, 1948): 27 cryptogamic specimens.

Purchases: 87 plant specimens—Uruguay.

CONDIT, DR. IRA J., Riverside, California: 1 plant specimen (gift).

COOPER, DR. I. C. G., Westerleigh, Staten Island, New York: 2 cryptogamic specimens (gift).

CORNELL UNIVERSITY, WIEGAND HERBARIUM, Ithaca, New York: 364 plant specimens from Georgia (exchange).

COURSEN, DR. B., Chicago: 9 specimens of marine algae (gift).

CRIBB, DR. A. B., Brisbane, Australia: 51 specimens of algae (gift).

CROWSON, DOROTHY, Tallahassee, Florida: 11 specimens of algae (gift).

CULBERSON, WILLIAM, Cincinnati: 52 specimens of fungi (gift).

CUTLER, DR. HUGH C., Chicago: 39 plant specimens from Brazil and United States (gift).

DAILY, MRS. FAY K., Indianapolis, Indiana: 1 cryptogamic specimen (gift).

DAILY, WILLIAM A., Indianapolis, Indiana: 2 specimens of algae (exchange).

DALMAT, DR. HERBERT T., Guatemala City, Guatemala: 1 cryptogamic specimen (gift).

DAWSON, DR. E. YALE, Los Angeles: 1 cryptogamic specimen (gift).

DEAM, CHARLES C., Bluffton, Indiana: 7 plant specimens (gift).

DILLER, DR. VIOLET M., Cincinnati: 25 specimens of cultures of algae (gift).

DORÉ, REVEREND THOMAS LOUIS, Chicoutimi, Quebec, Canada: 5 specimens of algae (gift).

DOTY, DR. MAXWELL S., Evanston, Illinois: 79 specimens of hepatic (gift).

DROUET, DR. FRANCIS, Chicago: 3 plant specimens (gift).

DYBAS, HENRY S., Hazelcrest, Illinois: 27 specimens of fungi (gift).

ECUADORIAN BALSA EXPORT COMPANY, Guayaquil, Ecuador: 17 boards of tropical woods for exhibit (gift).

ENSLIN, MRS. CHARLOTTE M., Oma-ruru, South West Africa: 2 wood specimens (gift).

EVANS, DR. R., Madison, Wisconsin: 33 specimens of cultures of Myxophyceae (gift).

FACULTAD AGRONOMÍA DE COLOMBIA, Cali, Colombia: 170 specimens of Colombian plants (gift).

FEIGLEY, MARGARET, Wilmette, Illinois: 35 cryptogamic specimens (gift).

FIELD, DR. HENRY, Washington, D.C.: 1 cryptogamic specimen (gift).

FIX, CAROLINE E., Utica, New York: 14 cryptogamic specimens (gift).

FLINT, DR. LEWIS H., Baton Rouge, Louisiana: 34 specimens of algae (exchange).

FLORIDA, UNIVERSITY OF, HERBARIUM, AGRICULTURAL EXPERIMENT STATION, Gainesville: 80 specimens of fungi (exchange).

FRASE, MRS. LOUIS D., Chicago: 1 cryptogamic specimen (gift).

FULLER, DR. GEORGE D., Chicago: 105 plant specimens from Illinois and California (gift).

GIER, DR. L. J., Liberty, Missouri: 4 specimens of algae (gift).

GILES, GEORGE H., Wilsonville, Nebraska: 13 specimens of algae (gift).

GLASSMAN, SIDNEY F., Norman, Oklahoma: 28 specimens of algae (gift).

GRAHAM, DR. VERNE O., Chicago: 1 cryptogamic specimen (gift).

GRAND RAPIDS PUBLIC MUSEUM, Grand Rapids, Michigan: 187 specimens of ferns (gift).

GREGG, COLONEL CLIFFORD C., Valparaiso, Indiana: 17 cryptogamic specimens (gift).

HAAS, DR. FRITZ, Chicago: 5 cryptogamic specimens (gift).

HABEEB, DR. HERBERT, Grand Falls, New Brunswick, Canada: 590 specimens of mosses and lichens (exchange).

HEWETSON, WILLIAM T., Freeport, Illinois: 1 grass specimen (gift).

HILLIER, DR. FRANCES WYNNE, Chicago: 15 specimens of mosses (gift).

HODGE, DR. WALTER H., Amherst, Massachusetts: 155 specimens of South American plants (exchange).

HOGSHEAD, RAYMOND C., North Miami, Florida: 13 plant specimens (gift).

HOLDRIDGE, DR. L. R., Turrialba, Costa Rica: 6 plant specimens (gift).

HOTCHKISS, ARLAND T., Dryden, New York: 10 specimens of algae (gift).

HUMM, DR. HAROLD J., Beaufort, North Carolina: 23 specimens of algae (gift); 41 specimens of algae (exchange).

INSTITUTO DE BOTÁNICA DARWINION, San Isidro, Argentina: 30 specimens of Argentine plants (exchange).

INSTITUTO GEOBIOLOGICO LA SALLE, Canoas, Brazil: 50 specimens of Brazilian plants (exchange).

INSTITUTO MIGUEL LILLO, UNIVERSIDAD NACIONAL DE TUCUMÁN, Tucumán, Argentina: 294 specimens of Argentine plants (exchange).

JONES, MRS. EDITH, West Palm Beach, Florida: 7 cryptogamic specimens (gift).

JONES, DR. G. NEVILLE, Urbana, Illinois: 1 plant specimen (gift).

KANSAS, UNIVERSITY OF, DEPARTMENT OF BOTANY, Lawrence: 522 specimens of Kansas plants (exchange).

KIENER, DR. WALTER, Lincoln, Nebraska: 144 specimens of algae (gift); 77 specimens of algae (exchange).

KLOUZER, JAMES V., Berwyn, Illinois: 1 cryptogamic specimen (gift).

LE FROIS, BERNARD J., S.V.D., Techney, Illinois: 1 cryptogamic specimen (gift).

LEITE, DR. J. EUGENIO, Nova-Friburgo, Brazil: 43 specimens of Brazilian plants (exchange).

LEON, BROTHER, Havana, Cuba: 1 specimen of palm seeds (gift).

LOOMIS, DR. NINA H., Los Angeles: 36 specimens of algae (gift).

LOUDERBACK, HAROLD B., Argo, Illinois: 5 specimens of algae (gift).

MACEDO, DR. AMARO, Ituitaba, Brazil: 9 plant specimens (gift).

MADSEN, DR. GRACE C., Tallahassee, Florida: 45 specimens of marine algae (gift).

MANEVAL, DR. W. E., Columbia, Missouri: 1 cryptogamic specimen (gift).

MATUDA, EIZI, Escuintla, Chiapas, Mexico: 560 specimens of Mexican

plants (gift); 250 specimens of Mexican plants (exchange).

MAY, DR. VALERIE, Cronulla, New South Wales, Australia: 12 cryptogamic specimens (gift).

MELHUS, DR. I. E., Antigua, Guatemala: 8 plant specimens (gift).

MERINO Y CORONADO, DR. J., Caracas, Venezuela: 10 plant specimens (gift).

MEYER, DR. FRED G., St. Louis: 91 specimens of North American plants (gift).

MICHIGAN, UNIVERSITY OF, HERBARIUM, Ann Arbor: 699 plant specimens (exchange).

MINNESOTA, UNIVERSITY OF, DEPARTMENT OF BOTANY, Minneapolis: 69 specimens of Minnesota plants (exchange).

MISSOURI, UNIVERSITY OF, DEPARTMENT OF BOTANY, Columbia: 122 specimens of fungi (exchange).

MISSOURI BOTANICAL GARDEN, St. Louis: 13 specimens of Panama plants (gift); 380 specimens of Panama plants (exchange).

MOLDENKE, DR. HAROLD N., New York: 518 photographic prints (exchange).

MUSEO FORESTAL UNIVERSIDAD DE AGRICULTURA, Bogotá, Colombia: 52 specimens of Colombian plants (exchange).

MUSEO DE HISTORIA NATURAL, UNIVERSIDAD NACIONAL DE SAN AGUSTIN, Arequipa, Peru: 26 specimens of Peruvian plants (gift).

MUSEO NACIONAL DE HISTORIA NATURAL, Santiago, Chile: 23 photographic prints (exchange).

MUSÉUM NATIONAL D'HISTOIRE NATURELLE, LABORATOIRE DE CRYPTOGAMIE, Paris, France: 420 specimens of algae (exchange).

MYERS, DR. JACK, Austin, Texas: 10 specimens of cultures of algae (gift).

NELSON, MRS. NATALIE C., Chicago: 3 specimens of fungi (gift).

NEW YORK BOTANICAL GARDEN, New York: 34 specimens of Ecuadorian plants (gift); 79 plant specimens (exchange).

NIELSEN, DR. CHESTER S., AND DR. GRACE C. MADSEN, Tallahassee, Florida: 423 specimens of algae (gift).

OAKES, ORVILLE A., Wilmette, Illinois: 1 specimen of *Metasequoia* wood (gift).

OSBORN, DR. BEN O., San Angelo, Texas: 13 cryptogamic specimens (gift).

PATRICK, DR. RUTH, Philadelphia: 52 specimens of algae (gift).

PENNAK, DR. R. W., Boulder, Colorado: 2 specimens of algae (gift).

PIONEER HYBRID CORN COMPANY, Johnston, Iowa: 400 ears of corn (gift).

QUEENSLAND, UNIVERSITY OF, DEPARTMENT OF BOTANY, Brisbane, Australia: 17 specimens of marine algae (exchange).

REED, T. J., Libertyville, Illinois: 1 cryptogamic specimen (gift).

RICHARDS, DONALD, FUND: 2,300 specimens of algae from New Brunswick; 100 specimens of hepaticas from Japan; 50 specimens of algae, 500 specimens of mosses, and 17 large lots of mosses from New Zealand (gift).

RICHARDS, ELMER J., FUND: 2,011 specimens of algae of the Francis Wolle Herbarium (gift).

RODRIGUEZ, DR. JOSÉ CALIENES, Arequipa, Peru: 26 specimens of Peruvian plants (gift).

ROSS, LILLIAN A., Chicago: 6 specimens of lichens (gift).

ROUSSEAU, DR. JACQUES, Montreal, Quebec, Canada: 82 specimens of algae (gift).

SAINSBURY, G. O. A., Wairoa, New Zealand: 50 specimens of mosses (exchange).

SCHULTES, DR. RICHARD EVANS, Cambridge, Massachusetts: 708 specimens of South American plants (gift); 13 specimens of South American plants (exchange).

SCOTT, DR. A. M., New Orleans: 2 specimens of algae (gift).

SCOTT, MILTON, Miami, Florida: 119 wood specimens (exchange).

SHERFF, DR. EARL E., Chicago: 108 specimens of Hawaiian plants, 18 negatives, 25 photographic prints (gift).

SILBERMAN, MRS. OTTO A., Chicago: 4 cryptogamic specimens (gift).

SOUTHERN CALIFORNIA, UNIVERSITY OF, ALLAN HANCOCK FOUNDATION, Los Angeles: 175 cryptogamic specimens (exchange).

STEYERMARK, MRS. CORA S., Barrington, Illinois: 1 cryptogamic specimen (gift).

STORRS, H. C., De Funiak Springs, Florida: 1 plant specimen (gift).

SUTLIFFE, MRS. E. C., San Francisco: 11 specimens of hepaticas (exchange).

TAYLOR, DR. WILLIAM RANDOLPH, Ann Arbor, Michigan: 96 specimens of algae (gift).

TENNESSEE, UNIVERSITY OF, DEPARTMENT OF BOTANY, Knoxville: 7 plant specimens (gift); 295 specimens of plants from Mexico and Guatemala (exchange).

TESSMANN, DR. GÜNTER, Curitiba, Paraná, Brazil: 43 specimens of Brazilian plants (gift).

TEXAS, UNIVERSITY OF, DEPARTMENT OF BOTANY, Austin: 260 plant specimens, 51 specimens of mosses (exchange).

THARP, DR. BENJAMIN C., Austin, Texas: 4 specimens of algae (gift).

TIFFANY, DR. HANFORD, Evanston, Illinois: 2 cryptogamic specimens (gift).

UNITED STATES NATIONAL MUSEUM, Washington, D.C.: 6 fossil specimens of *Metasequoia* for exhibit (gift); 1,178 plant specimens, 130 photographic prints, 1 photostat, 50 specimens of algae (exchange).

VATTER, DR. ALBERT E., Chicago: 1 specimen of culture of *Calothrix* (gift).

VAUGHAN'S SEED STORE, Chicago: 1 aquarium (gift).

WALPOLE, STEWART J., Mount Dora, Florida: 1 plant specimen (gift).

WASHINGTON, UNIVERSITY OF, DEPARTMENT OF BOTANY, Seattle: 95 specimens of Washington plants (exchange).

WILLIAMS, LLEWELYN, Randolph, Wisconsin: 1 palm trunk (gift).

WILLIAMS, DR. LOUIS G., Greenville, South Carolina: 14 specimens of algae (gift).

WILSON, ARCHIE F., Flossmoor, Illinois: 1 plant specimen (gift); 14 wood specimens (exchange).

WILSON, ARCHIE F., Flossmoor, Illinois, AND HAROLD NAGLE, Port Arthur, Texas: 2 plant specimens, 2 wood specimens (gift).

WITOKT, MRS. CHARLOTTE, Franklin Park, Illinois: 5 specimens of fungi (gift).

WOLFF, SIMON E., Fort Worth, Texas: 5 cryptogamic specimens (gift).

WOMERSLEY, DR. H. B. S., Adelaide, Australia: 9 specimens of algae (gift).

WOOD, DR. CARROLL E., JR., Cambridge, Massachusetts: 7 specimens of algae (gift).

YALE UNIVERSITY, SCHOOL OF FORESTRY, New Haven, Connecticut: 63 specimens of plants from Panama and Venezuela (gift).

YEPES, SILVIO, Popayán, Colombia: 300 specimens of Colombian plants (gift).

DEPARTMENT OF GEOLOGY—ACCESSIONS

AMERICAN MUSEUM OF NATURAL HISTORY, New York: 1 plaster model of a foraminifera (gift).

BARBER, C. M., Flint, Michigan: 2 fossil turtles (*Toxochelyids*)—Alabama (gift).

BELL, MRS. E. M., Trinidad, Colorado: 1 fossil bowfin fish—Colorado (gift).

BELL, RODNEY L.: 17 fossil brachiopods—Tennessee (gift).

CHALMERS CRYSTAL FUND: 1 chrysoberyl crystal—South Dakota; 1 thortveitite crystal—Norway (gift).

CHICAGO, UNIVERSITY OF, Chicago: 10 fossil fish teeth, 2 trilobites—various localities (gift).

CHICAGO NATURAL HISTORY MUSEUM: Collected by Dr. Robert H. Denison (Geology Field Trip to the Catskill Mountains, New York, 1949): 1 fossil pelecypod, *Amnigenia catskillensis* (Vanuxem)—New York; (Western Paleontological Expedition, 1949): 68 fossil fish—various localities.

Collected by George Langford (Wilmington, Illinois, Paleobotanical Field Trips, 1949): 137 fossil invertebrates, 5 fossil fish, 3,363 fossil plants—Will County, Illinois.

Collected by George Langford and Eugene S. Richardson, Jr. (Field Trip to Will County, Illinois, 1949): 7 king crabs—Will County, Illinois.

Collected by Eugene S. Richardson, Jr. (Pennsylvania Geological Field Trip, 1948): collection of fossil invertebrates—various localities; (Western States Invertebrate Paleontological Field Trip, 1949): collection of fossil invertebrates and fossil plants—various localities.

Collected by Eugene S. Richardson, Jr., and George Langford (Tennessee Invertebrate Paleontological Field Trip, 1949): collection of fossil invertebrates and plants—various localities.

Collected by Dr. Sharat K. Roy and Orville L. Gilpin (Eastern States Invertebrate Paleontological Expedition, 1949): collection of Ordovician and Devonian invertebrates—various localities.

Collected by Dr. Rainer Zangerl, Bryan Patterson, and Dr. Robert H. Denison (Texas Paleontological Field Trip, 1949): collection of fossil fish, amphibians, reptiles, and mammals—Texas.

Collected by Dr. Rainer Zangerl and Jack Wilson (geology study trip, 1949): 16 fossil invertebrates—Texas.

Purchases: 10 fossil cephalopods, 1 fossil brachiopod, 1 trilobite, 28 fossil sponges, 6 mollusk (Chiton) shells, 2 modern brachiopods, 1 modern worm—various localities.

CLARK, LORIN, San Francisco: 3 Stromatolite specimens—Michigan (gift).

CLARK, S. L., South Lancaster, Massachusetts: 1 uranium mineral (gummite)—New Hampshire (exchange).

CLARKE, BEVERLY, Vicksburg, Mississippi: femur of fossil mammal—locality unknown (gift).

DAHLBERG, DR. ALBERT A., Chicago: east of lower jaw of *Australopithecus prometheus*—South Africa (gift).

DUNBAR, DR. CARL O., New Haven, Connecticut: 1 fossil invertebrate—Labrador (exchange).

EAGLE PICHER RESEARCH LABORATORIES, Joplin, Missouri: 18 samples of lead and zinc products—manufactured (gift).

GAMMELL, R. E., Chicago: 2 trilobites—locality unknown (exchange).

GOLDRING, DR. WINIFRED, Albany, New York: 3 graptolites—New York (exchange).

HARRINGTON, DR. HORACIO H., Buenos Aires, Argentina: 5 trilobites—locality unknown (gift).

KAY, DR. J. LEROY, Pittsburgh: 3 fossil mammals—various localities (gift).

LANGFORD, GEORGE, Chicago: collection of fossil fish, reptiles, and mammals—South Dakota (gift).

LEES, ARTHUR H., Socorro, New Mexico: 3 fossil invertebrates—New Mexico (gift).

LOOK, ALFRED A., Grand Junction, Colorado: 2 fossil mammals, 1 fossil reptile—Colorado (gift).

MC LAUGHLIN, KENNETH, Pullman, Washington: 4 fossil corals, 28 fossil plants—various localities (exchange).

MURRAY, WILLIAM M., Chicago: 1 physical geology specimen showing differential weathering—Glacier Park (gift).

MUSEUM OF COMPARATIVE ZOOLOGY, Cambridge, Massachusetts: 1 fossil reptile, *Diadectes*—Texas (exchange).

NATIONAL SPELEOLOGICAL SOCIETY, Washington, D.C.: 26 cave minerals—Virginia (gift).

OAKLEY, DR. KENNETH P., London, England: Silurian trilobites—England (exchange).

PERRY, STUART H., Adrian, Michigan: 1 stone meteorite—Girgenti, Italy; 2 iron meteorites—Hill City, Kansas, and Weaver, Arizona (gift).

RICHARDSON, EDWARDS N., Winnetka, Illinois: 1 tent for field work (gift).

RICHARDSON, EUGENE S., JR., Winnetka, Illinois: 1 Silurian trilobite, *Dalmanites Platycaudatus*—Illinois (gift).

SANBORN, COLIN C., Highland Park, Illinois: 1 Mississippian bryozoan—Arkansas (gift).

STERNBURG, G. F., Hays, Kansas: 1 fossil turtle (*Ctenochelys*)—Kansas (gift).

STOCKWELL, H. O., Hutchinson, Kansas: 1 stone-iron—Brenham, Kansas; 1 stone meteorite—Noreator, Kansas (gift).

THOMPSON, R. T., Pheonix, Arizona: 1 specimen of fluorescent mineral (aragonite)—Arizona (gift).

WHITFIELD, DR. AND MRS. R. H., AND JON S. WHITFIELD, Evanston, Illinois: 319 fossil plants, 5 fossil invertebrates—various localities (gift).

ZANGERL, DR. RAINER, Harvey, Illinois, AND C. M. BARBER, Flint, Michigan: collection of fossil fish, reptiles, and invertebrates—Alabama (gift).

DEPARTMENT OF ZOOLOGY—ACCESSIONS

ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, Philadelphia: 3 lots of fresh-water mollusks—South America (exchange).

ACOSTA Y LARA, EDUARDO, Montevideo, Uruguay: 2 mammals—Uruguay (gift).

ALLEN, DR. THOMAS D., Chicago: 2 snake skins—South America (gift).

AMERICAN MUSEUM OF NATURAL HISTORY, New York: 1 fish—Key West, Florida (exchange); 1 fish, 75 damselfish—British West Indies (gift).

ARCHBOLD, RICHARD, Lake Placid, Florida: 1 reptile—Lake Placid, Florida (gift).

BARD, F. G., Regina, Saskatchewan: 5 mammals—Bredin, Saskatchewan (gift).

BARKER, R. WRIGHT, Maracaibo, Venezuela: collection of fresh-water mollusks—Venezuela (gift).

BAUER, MARGARET J., Chicago: 1 mollusk—Mammoth Cave State Park, Kentucky (gift).

BEECHER, WILLIAM J., Chicago: 248 insects—Solomon Islands (gift).

BENESH, BERNARD, Chicago: 2 reptiles, 5 amphibians—Tennessee (gift).

BIESE, DR. WALTER, Santiago, Chile: 14 lots of mollusks (including paratypes)—Chile (exchange).

BIPPUS, ALVIN C., Toledo, Ohio: 1 mollusk—Mazatlan, Mexico (gift).

BISHOP, DR. S. C., Rochester, New York: 2 amphibians (type and allotype)—Alabama (gift).

BLANKE, JOHN H. D., Barrington, Illinois: 177 fresh-water mollusks—Barrington, Illinois (gift).

BRITISH MUSEUM (NATURAL HISTORY), London, England: 332 lots of fresh-water mollusks (including paratypes)—Lake Titicaca, Peru (exchange).

BRODIE, LAURA, Chicago: 32 reptiles, 64 amphibians, 4 fishes, 35 insects and their allies, 10 lower invertebrates—South Carolina (gift).

BUCH, REVEREND A., Ningpo, China: 33 insects—Ningpo, China (gift).

BUCHEN, WALTHER, Chicago: 452 birds, 1 reptile—East Africa (gift).

CAHN, DR. ALVINE R., Japan: 5 amphibians, series of amphibian eggs and larva—Japan (gift).

CALIFORNIA ACADEMY OF SCIENCES, San Francisco: 110 insects (2 paratypes)—Africa and North America (exchange).

CARLSON, RUTH, AND ELLEN CARLSON, West Chicago, Illinois: 1 skeleton of champion Manx cat, 1 preserved hind quarters of champion Manx cat—domestic (gift).

CARRERA, MESSIAS, Sao Paulo, Brazil: 50 insects (2 paratypes)—Brazil (gift).

CHICAGO NATURAL HISTORY MUSEUM: Collected by Laura Brodie (local field work): 1 mammal—Indiana.

Collected by Dr. Francis Drouet (Gulf States Botanical Expedition, 1948-49): 16 mollusks—Florida.

Collected by Henry S. Dybas (Palau Entomological Expedition, 1947-48): 6 mammals—Caroline Islands; (Southeastern States Zoological Field Trip, 1949): 1 amphibian—Alabama.

Collected by Philip Hershkovitz (Columbian Zoological Expedition, 1948-50): 755 mammals—Colombia.

Collected by Harry Hoogstraal (University of California African Expedition, 1948): 2 reptiles—Madagascar.

Collected by Harry Hoogstraal and others (Philippines Zoological Expedition, 1946-47): 10,823 insects and their allies—Philippine Islands.

Collected by Clifford H. Pope (Mountain Lake Biological Station Field Trip, 1949): 863 reptiles and amphibians—southeastern United States.

Collected by Clifford H. Pope and Robert F. Inger (Havana, Illinois, Field Trip, 1949): 30 fishes—Illinois.

Collected by D. S. Rabor (Philippine Islands field work): 10 birds—Negros Island, Philippine Islands.

Collected by Colin C. Sanborn (Arkansas Zoological Field Trip, 1948): 455 insects—Arkansas.

Collected by Karl P. Schmidt, Brian Barry, and William H. Dawbin (New Zealand field work): 1 mammary apparatus and section of aorta of hump-backed whale, 68 reptiles and amphibians, 40 fishes, 96 insects and their allies, 40 lots of lower invertebrates, 11 peripatus—New Zealand.

Collected by William D. Turnbull (Wyoming Paleontological Expedition, 1948): 37 insects and their allies—Wyoming and South Dakota.

Collected by A. Rush Watkins, Colin C. Sanborn, and Frank C. Wonder (Rush Watkins Siamese Zoological Expedition, 1949): 196 mammals, 64 birds, 972 fishes, 52 lots of lower invertebrates—Siam.

Collected by Rupert L. Wenzel and Henry S. Dybas (from animals brought in for Museum collection): 46 insects and their allies.

Collected by Rupert L. Wenzel, Henry S. Dybas, and Robert F. Inger (local field work): 496 insects and their allies—Illinois and Indiana.

Collected by Rupert L. Wenzel, Rodger D. Mitchell, and Luis de la Torre (Guatemalan Zoological Expedition, 1948): 5 mammals, 7 reptiles and amphibians, 406 insects—Guatemala.

Collected by Dr. Rainer Zangerl (study trip to paleontological museums): 117 mollusks—Texas.

Purchases: 447 mammals, 2 mammal skulls, 1,636 birds, 464 reptiles and amphibians, 272 fishes, 8,561 insects and their allies, 641 lower invertebrates.

CHICAGO ZOOLOGICAL SOCIETY, Brookfield, Illinois: 11 mammals, 29 birds, 3 reptiles, 7 reptile eggs—various localities (gift).

CIFERRI, CLAUDIO, Caracas, Venezuela: 66 birds—Venezuela (exchange).

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STROUD, CLYDE P., Chicago: 1 amphibian—New Mexico (gift).

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TEXAS, AGRICULTURAL AND MECHANICAL COLLEGE OF, College Station: 38 mammals—Colorado (gift).

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TRAPIDO, HAROLD, Panama, Panama: 499 reptiles and amphibians—Central and South America (gift).

TRAUB, MAJOR ROBERT, Washington, D.C.: 29 mammals, 12 insects—various localities (gift); 4 insects—Costa Rica (exchange).

UNITED STATES FISH AND WILDLIFE SERVICE, Washington, D.C.: 5 fishes—Florida and Texas (gift).

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 Wetten, Walton
 Wetmore, Horace O.
 Wezeman, Frederick H.
 Wheeler, Mrs. Seymour
 Wheelock, Miss Ellen P.

Whipple, Gaylord C.
 Whipple, Mrs. Jay N.
 Whipple, Miss Velma D.
 Whiston, Frank M.
 White, Mrs. Harold R.
 White, William J.
 Whitelock, John B.
 Whitney, Mrs.
 Charles R.
 Whitney, Emerson C.
 Wholey, Mrs. Leota
 Gregory
 Wible, R. R.
 Wickersham, Mrs.
 Lucille
 Wickland, Algot A.
 Wickman, C. E.
 Wilbur, Lawrence S.
 Wilby, A. C.
 Wilcox, Edward B.
 Wilds, John L.
 Wiley, Mrs. Edwin G.
 Wilhite, James A.
 Wilk, Dr. Clifford M.
 Wilkinson, William D.
 Willard, Nelson W.
 Williams, Albert W.
 Williams, Mrs.
 Allan C., Jr.
 Williams, Lawrence
 Williams, Ralph E.
 Williams, Russell V.
 Williamson, Henry T.
 Williamson, John T.
 Willis, Ivan L.
 Wilson, Allen B.
 Wilson, Arlen J.
 Wilson, H. Fred
 Wilson, Percival C.
 Wincher, John A.
 Winchey, Mrs.
 Frederick O.
 Winsberg, Herbert H.
 Winsberg, Samuel
 Winston, Mrs. Farwell
 Winterbotham, John R.
 Wise, James E.
 Wiseman, William P.
 Witkowsky, James
 Witt, Earl J.
 Wolf, Morris E.

Wolf, Orrin E.
 Wolff, Frank C.
 Wolff, Oscar M.
 Wood, Edward W.
 Wood, Milton G.
 Wood, William A.
 Woodson, William T.
 Woodward, Arthur H.
 Woodyatt, Dr. Rollin
 Turner
 Woolard, Francis C.
 Woolf, S. Roger
 Wooster, Charles C.
 Worthy, Mrs. James C.
 Woulfe, Henry F.
 Wright, William Ryer
 Wrisley, George A.
 Wrisley, L. Norton

Yager, Mrs. Vincent
 Yates, John E.
 Yohe, C. Lloyd
 York, Melvin S.
 Youker, Mrs. Claude W.
 Youmans, Mrs. M. A.
 Young, C. S.
 Young, Dr. Donald R.
 Young, J. H.
 Young, J. L.
 Youngberg, Arthur C.
 Youngren, W. W.
 Youngsma, T. S.

Zaczek, Miss
 Genevieve A.
 Zadek, Milton
 Zangerle, A. Arthur
 Zaus, Mrs. Earl A.
 Zelezny, John G.
 Zelzer, Harry
 Zillman, Mrs. L. C.
 Zimmerman, Austin M.
 Zimmerman, Carl
 Zimmerman, E. W.
 Zimmerman, Dr.
 Harold W.
 Zimmerman, Preston
 Zimmerman, Mrs. P. T.
 Zipse, Edwin W.
 Zitzewitz, Elmer K.
 Zolla, Abner M.

DECEASED, 1949

Adams, Hugh R.
 Alexander, John F.
 Boening, Mrs. Louis A.
 Bothman, Dr. Louis
 Broude, Mrs. William S.
 Burnell, Edward J.

Curda, Frank R.
 Dole, Mrs. Andrew R.
 Gaul, Hermann J., Sr.
 Good, Arthur P.
 Gorski, Martin

Green, Walter H.
 Gunnar, Mrs. H. P.
 Hall, Miss Fanny A.
 Hart, Mrs. G. H.
 Herman, Eli
 Hewes, Howard H.

ANNUAL MEMBERS (*Continued*)

Keeler, Leonarde	Saladin, Harry J.	Spitz, M. W.
Lange, Dr. William H.	Schweitzer, E. O.	
Lundgren, Dr. Albert T.	Sears, A. T.	Unwin, Mrs. Parkinson
Rockhold, Mrs.	Sonnenschein, Mrs.	
Charles W.	Edward	Weiss, Louis A.

Articles of Incorporation

STATE OF ILLINOIS

DEPARTMENT OF STATE

WILLIAM H. HINRICHSEN, *Secretary of State*

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETING:

Whereas, a Certificate duly signed and acknowledged having been filed in the office of the Secretary of State, on the 16th day of September, A.D. 1893, for the organization of the COLUMBIAN MUSEUM OF CHICAGO, under and in accordance with the provisions of "An Act Concerning Corporations," approved April 18, 1872, and in force July 1, 1872, and all acts amendatory thereof, a copy of which certificate is hereto attached.

Now, therefore, I, William H. Hinrichsen, Secretary of State of the State of Illinois, by virtue of the powers and duties vested in me by law, do hereby certify that the said COLUMBIAN MUSEUM OF CHICAGO is a legally organized Corporation under the laws of this State.

In Testimony Whereof, I hereto set my hand and cause to be affixed the Great Seal of State. Done at the City of Springfield, this 16th day of September, in the year of our Lord one thousand eight hundred and ninety-three, and of the Independence of the United States the one hundred and eighteenth.

W. H. HINRICHSEN,

Secretary of State.

[SEAL]

TO HON. WILLIAM H. HINRICHSEN,

SECRETARY OF STATE:

SIR:

We, the undersigned citizens of the United States, propose to form a corporation under an act of the General Assembly of the State of Illinois, entitled "An Act Concerning Corporations," approved April 18, 1872, and all acts amendatory thereof; and that for the purposes of such organization we hereby state as follows, to-wit:

1. The name of such corporation is the "COLUMBIAN MUSEUM OF CHICAGO."

2. The object for which it is formed is for the accumulation and dissemination of knowledge, and the preservation and exhibition of objects illustrating Art, Archaeology, Science and History.

3. The management of the aforesaid museum shall be vested in a Board of FIFTEEN (15) TRUSTEES, five of whom are to be elected every year.

4. The following named persons are hereby selected as the Trustees for the first year of its corporate existence:

Edward E. Ayer, Charles B. Farwell, George E. Adams, George R. Davis, Charles L. Hutchinson, Daniel H. Burnham, John A. Roche, M. C. Bullock, Emil G. Hirsch, James W. Ellsworth, Allison V. Armour, O. F. Aldis, Edwin Walker, John C. Black and Frank W. Gunsaulus.

5. The location of the Museum is in the City of Chicago, County of Cook, and State of Illinois.

(Signed)

George E. Adams, C. B. Farwell, Sidney C. Eastman, F. W. Putnam, Robert McCurdy, Andrew Peterson, L. J. Gage, Charles L. Hutchinson, Ebenezer

Buckingham, Andrew McNally, Edward E. Ayer, John M. Clark, Herman H. Kohlsaat, George Schneider, Henry H. Getty, William R. Harper, Franklin H. Head, E. G. Keith, J. Irving Pearce, Azel F. Hatch, Henry Wade Rogers, Thomas B. Bryan, L. Z. Leiter, A. C. Bartlett, A. A. Sprague, A. C. McClurg, James W. Scott, Geo. F. Bissell, John R. Walsh, Chas. Fitzsimmons, John A. Roche, E. B. McCagg, Owen F. Aldis, Ferdinand W. Peck, James H. Dole, Joseph Stockton, Edward B. Butler, John McConnell, R. A. Waller, H. C. Chatfield-Taylor, A. Crawford, Wm. Sooy Smith, P. S. Peterson, John C. Black, Jno. J. Mitchell, C. F. Gunther, George R. Davis, Stephen A. Forbes, Robert W. Patterson, Jr., M. C. Bullock, Edwin Walker, George M. Pullman, William E. Curtis, James W. Ellsworth, William E. Hale, Wm. T. Baker, Martin A. Ryerson, Huntington W. Jackson, N. B. Ream, Norman Williams, Melville E. Stone, Bryan Lathrop, Eliphalet W. Blatchford, Philip D. Armour.

STATE OF ILLINOIS }
COOK COUNTY } ss.

I, G. R. MITCHELL, a NOTARY PUBLIC in and for said County, do hereby certify that the foregoing petitioners personally appeared before me and acknowledged severally that they signed the foregoing petition as their free and voluntary act for the uses and purposes therein set forth.

Given under my hand and notarial seal this 14th day of September, 1893.

G. R. MITCHELL,

[SEAL] NOTARY PUBLIC, COOK COUNTY, ILL.

CHANGE IN ARTICLE 1

Pursuant to a resolution passed at a meeting of the corporate members held the 25th day of June, 1894, the name of the COLUMBIAN MUSEUM was changed to FIELD COLUMBIAN MUSEUM. A certificate to this effect was filed June 26, 1894, in the office of the Secretary of State for Illinois.

CHANGE IN ARTICLE 1

Pursuant to a resolution passed at a meeting of the corporate members held the 8th day of November, 1905, the name of the FIELD COLUMBIAN MUSEUM was changed to FIELD MUSEUM OF NATURAL HISTORY. A certificate to this effect was filed November 10, 1905, in the office of the Secretary of State for Illinois.

CHANGE IN ARTICLE 3

Pursuant to a resolution passed at a meeting of the corporate members held the 10th day of May, 1920, the management of FIELD MUSEUM OF NATURAL HISTORY shall be invested in a Board of TWENTY-ONE (21) TRUSTEES, who shall be elected in such manner and for such time and term of office as may be provided for by the By-Laws. A certificate to this effect was filed May 21, 1920, in the office of the Secretary of State for Illinois.

CHANGE IN ARTICLE 1

Pursuant to a resolution passed at a meeting of the corporate members held the 15th day of November, 1943, the name of FIELD MUSEUM OF NATURAL HISTORY was changed to CHICAGO NATURAL HISTORY MUSEUM. A certificate to this effect was filed November 23, 1943, in the office of the Secretary of State for Illinois.

Amended By-Laws

DECEMBER, 1945

ARTICLE I

MEMBERS

SECTION 1. Members shall be of twelve classes, Corporate Members, Honorary Members, Patrons, Corresponding Members, Benefactors, Contributors, Life Members, Non-Resident Life Members, Associate Members, Non-Resident Associate Members, Sustaining Members, and Annual Members.

SECTION 2. The Corporate Members shall consist of the persons named in the articles of incorporation, and of such other persons as shall be chosen from time to time by the Board of Trustees at any of its meetings, upon the recommendation of the Executive Committee; provided, that such person named in the articles of incorporation shall, within ninety days from the adoption of these By-Laws, and persons hereafter chosen as Corporate Members shall, within ninety days of their election, pay into the treasury the sum of Twenty Dollars (\$20.00) or more. Corporate Members becoming Life Members, Patrons or Honorary Members shall be exempt from dues. Annual meetings of said Corporate Members shall be held at the same place and on the same day that the annual meeting of the Board of Trustees is held.

SECTION 3. Honorary Members shall be chosen by the Board from among persons who have rendered eminent service to science, and only upon unanimous nomination of the Executive Committee. They shall be exempt from all dues.

SECTION 4. Patrons shall be chosen by the Board upon recommendation of the Executive Committee from among persons who have rendered eminent service to the Museum. They shall be exempt from all dues, and, by virtue of their election as Patrons, shall also be Corporate Members.

SECTION 5. Any person contributing or devising the sum of One Hundred Thousand Dollars (\$100,000.00) in cash, or securities, or property to the funds of the Museum, may be elected a Benefactor of the Museum.

SECTION 6. Corresponding Members shall be chosen by the Board from among scientists or patrons of science residing in foreign countries, who render important service to the Museum. They shall be elected by the Board of Trustees at any of its meetings. They shall be exempt from all dues and shall enjoy all courtesies of the Museum.

SECTION 7. Any person contributing to the Museum One Thousand Dollars (\$1,000.00) or more in cash, securities, or material, may be elected a Contributor of the Museum. Contributors shall be exempt from all dues and shall enjoy all courtesies of the Museum.

SECTION 8. Any person paying into the treasury the sum of Five Hundred Dollars (\$500.00) at any one time, shall, upon the unanimous vote of the Board, become a Life Member. Life Members shall be exempt from all dues, and shall enjoy all the privileges and courtesies of the Museum that are accorded to members of the Board of Trustees. Any person residing fifty miles or more from the city of Chicago, paying into the treasury the sum of One Hundred Dollars (\$100.00) at any one time, shall, upon the unanimous vote of the Board, become a Non-Resident Life Member. Non-Resident Life Members shall be exempt from all dues, and shall enjoy all the privileges and courtesies of the Museum that are accorded to members of the Board of Trustees.

SECTION 9. Any person paying into the treasury of the Museum the sum of One Hundred Dollars (\$100.00) at any one time, shall, upon the vote of the Board,

become an Associate Member. Associate Members shall be exempt from all dues, and shall be entitled to tickets admitting Member and members of family, including non-resident home guests; all publications of the Museum issued during the period of their membership, if so desired; reserved seats for all lectures and entertainments under the auspices of the Museum, provided reservation is requested in advance; and admission of holder of membership and accompanying party to all special exhibits and Museum functions day or evening. Any person residing fifty miles or more from the city of Chicago, paying into the treasury the sum of Fifty Dollars (\$50.00) at any one time, shall, upon the unanimous vote of the Board, become a Non-Resident Associate Member. Non-Resident Associate Members shall be exempt from all dues, and shall enjoy all the privileges and courtesies of the Museum that are accorded to Associate Members.

SECTION 10. Sustaining Members shall consist of such persons as are selected from time to time by the Board of Trustees at any of its meetings, and who shall pay an annual fee of Twenty-five Dollars (\$25.00), payable within thirty days after notice of election and within thirty days after each recurring annual date. This Sustaining Membership entitles the Member to free admission for the Member and family to the Museum on any day, the Annual Report and such other Museum documents or publications issued during the period of their membership as may be requested in writing. When a Sustaining Member has paid the annual fee of \$25.00 for six years, such Member shall be entitled to become an Associate Member.

SECTION 11. Annual Members shall consist of such persons as are selected from time to time by the Board of Trustees at any of its meetings, and who shall pay an annual fee of Ten Dollars (\$10.00), payable within thirty days after each recurring annual date. An Annual Membership shall entitle the Member to a card of admission for the Member and family during all hours when the Museum is open to the public, and free admission for the Member and family to all Museum lectures and entertainments. This membership will also entitle the holder to the courtesies of the membership privileges of every museum of note in the United States and Canada, so long as the existing system of co-operative interchange of membership tickets shall be maintained, including tickets for any lectures given under the auspices of any of the museums during a visit to the cities in which the co-operative museums are located.

SECTION 12. All membership fees, excepting Sustaining and Annual, shall hereafter be applied to a permanent Membership Endowment Fund, the interest only of which shall be applied for the use of the Museum as the Board of Trustees may order.

ARTICLE II

BOARD OF TRUSTEES

SECTION 1. The Board of Trustees shall consist of twenty-one members. The respective members of the Board now in office, and those who shall hereafter be elected, shall hold office during life. Vacancies occurring in the Board shall be filled at a regular meeting of the Board, upon the nomination of the Executive Committee made at a preceding regular meeting of the Board, by a majority vote of the members of the Board present.

SECTION 2. Regular meetings of the Board shall be held on the third Monday of the month. Special meetings may be called at any time by the President, and shall be called by the Secretary upon the written request of three Trustees. Five Trustees shall constitute a quorum, except for the election of officers or the adoption of the Annual Budget, when seven Trustees shall be required, but meetings may be adjourned by any less number from day to day, or to a day fixed, previous to the next regular meeting.

SECTION 3. Reasonable written notice, designating the time and place of holding meetings, shall be given by the Secretary.

ARTICLE III

HONORARY TRUSTEES

SECTION 1. As a mark of respect, and in appreciation of services performed for the Institution, any Trustee who by reason of inability, on account of change

of residence, or for other cause or from indisposition to serve longer in such capacity shall resign his place upon the Board, may be elected, by a majority of those present at any regular meeting of the Board, an Honorary Trustee for life. Such Honorary Trustee will receive notice of all meetings of the Board of Trustees, whether regular or special, and will be expected to be present at all such meetings and participate in the deliberations thereof, but an Honorary Trustee shall not have the right to vote.

ARTICLE IV

OFFICERS

SECTION 1. The officers shall be a President, a First Vice-President, a Second Vice-President, a Third Vice-President, a Secretary, an Assistant Secretary and a Treasurer. They shall be chosen by ballot by the Board of Trustees, a majority of those present and voting being necessary to elect. The President, the First Vice-President, the Second Vice-President, and the Third Vice-President shall be chosen from among the members of the Board of Trustees. The meeting for the election of officers shall be held on the third Monday of January of each year, and shall be called the Annual Meeting.

SECTION 2. The officers shall hold office for one year, or until their successors are elected and qualified, but any officer may be removed at any regular meeting of the Board of Trustees by a vote of two-thirds of all the members of the Board. Vacancies in any office may be filled by the Board at any meeting.

SECTION 3. The officers shall perform such duties as ordinarily appertain to their respective offices, and such as shall be prescribed by the By-Laws, or designated from time to time by the Board of Trustees.

ARTICLE V

THE TREASURER

SECTION 1. The Treasurer shall be custodian of the funds of the Corporation, except as hereinafter provided. He shall make disbursements only upon warrants, signed by such officer, or officers, or other persons as the Board of Trustees may from time to time designate.

SECTION 2. The securities and muniments of title belonging to the corporation shall be placed in the custody of some Trust Company of Chicago to be designated by the Board of Trustees, which Trust Company shall collect the income and principal of said securities as the same become due, and pay same to the Treasurer, except as hereinafter provided. Said Trust Company shall allow access to and deliver any or all securities or muniments of title to the joint order of the following officers, namely: the President or one of the Vice-Presidents, jointly with the Chairman, or one of the Vice-Chairmen, of the Finance Committee of the Museum. The President or any one of the Vice-Presidents, jointly with either the Chairman or any one of the other members of the Finance Committee, are authorized and empowered (a) to sell, assign and transfer as a whole or in part the securities owned by or registered in the name of the Chicago Natural History Museum, and, for that purpose, to endorse certificates in blank or to a named person, appoint one or more attorneys, and execute such other instruments as may be necessary, and (b) to cause any securities belonging to this Corporation now, or acquired in the future, to be held or registered in the name or names of a nominee or nominees designated by them.

SECTION 3. The Treasurer shall give bond in such amount, and with such securities as shall be approved by the Board of Trustees.

SECTION 4. The Harris Trust & Savings Bank of Chicago shall be Custodian of "The N. W. Harris Public School Extension of the Chicago Natural History Museum" fund. The bank shall make disbursements only upon warrants drawn by the Director and countersigned by the President. In the absence or inability of the Director, warrants may be signed by the Chairman of the Finance Committee, and in the absence or inability of the President, may be countersigned by one of the Vice-Presidents, or any member of the Finance Committee.

ARTICLE VI

THE DIRECTOR

SECTION 1. The Board of Trustees shall elect a Director of the Museum, who shall remain in office until his successor shall be elected. He shall have immediate charge and supervision of the Museum, and shall control the operations of the Institution, subject to the authority of the Board of Trustees and its Committees. The Director shall be the official medium of communication between the Board, or its Committees, and the scientific staff and maintenance force.

SECTION 2. There shall be four scientific Departments of the Museum—Anthropology, Botany, Geology, and Zoology—each under the charge of a Chief Curator, subject to the authority of the Director. The Chief Curators shall be appointed by the Board upon the recommendation of the Director, and shall serve during the pleasure of the Board. Subordinate staff officers in the scientific Departments shall be appointed and removed by the Director upon the recommendation of the Chief Curators of the respective Departments. The Director shall have authority to employ and remove all other employees of the Museum.

SECTION 3. The Director shall make report to the Board at each regular meeting, recounting the operations of the Museum for the previous month. At the Annual Meeting, the Director shall make an Annual Report, reviewing the work for the previous year, which Annual Report shall be published in pamphlet form for the information of the Trustees and Members, and for free distribution in such number as the Board may direct.

ARTICLE VII

THE AUDITOR

SECTION 1. The Board shall appoint an Auditor, who shall hold his office during the pleasure of the Board. He shall keep proper books of account, setting forth the financial condition and transactions of the Corporation, and of the Museum, and report thereon at each regular meeting, and at such other times as may be required by the Board. He shall certify to the correctness of all bills rendered for the expenditure of the money of the Corporation.

ARTICLE VIII

COMMITTEES

SECTION 1. There shall be five Committees, as follows: Finance, Building, Auditing, Pension, and Executive.

SECTION 2. The Finance Committee shall consist of not less than five or more than seven members, the Auditing and Pension Committees shall each consist of three members, and the Building Committee shall consist of five members. All members of these four Committees shall be elected by ballot by the Board at the Annual Meeting, and shall hold office for one year, and until their successors are elected and qualified. In electing the members of these Committees, the Board shall designate the Chairman and Vice-Chairman by the order in which the members are named in the respective Committee; the first member named shall be Chairman, the second named the Vice-Chairman, and the third named, Second Vice-Chairman, succession to the Chairmanship being in this order in the event of the absence or disability of the Chairman.

SECTION 3. The Executive Committee shall consist of the President of the Board, the Chairman of the Finance Committee, the Chairman of the Building Committee, the Chairman of the Auditing Committee, the Chairman of the Pension Committee, and three other members of the Board to be elected by ballot at the Annual Meeting.

SECTION 4. Four members shall constitute a quorum of the Executive Committee, and in all standing Committees two members shall constitute a quorum. In the event that, owing to the absence or inability of members, a quorum of the regularly elected members cannot be present at any meeting of any Committee, then the Chairman thereof, or his successor, as herein provided, may summon any members of the Board of Trustees to act in place of the absentee.

SECTION 5. The Finance Committee shall have supervision of investing the endowment and other funds of the Corporation, and the care of such real estate as may become its property. It shall have authority to make and alter investments from time to time, reporting its actions to the Board of Trustees. The Finance Committee is fully authorized to cause any funds or investments of the Corporation to be made payable to bearer, and it is further authorized to cause real estate of the Corporation, its funds and investments, to be held or registered in the name of a nominee selected by it.

SECTION 6. The Building Committee shall have supervision of the construction, reconstruction, and extension of any and all buildings used for Museum purposes.

SECTION 7. The Executive Committee shall be called together from time to time as the Chairman may consider necessary, or as he may be requested to do by three members of the Committee, to act upon such matters affecting the administration of the Museum as cannot await consideration at the Regular Monthly Meetings of the Board of Trustees. It shall, before the beginning of each fiscal year, prepare and submit to the Board an itemized Budget, setting forth the probable receipts from all sources for the ensuing year, and make recommendations as to the expenditures which should be made for routine maintenance and fixed charges. Upon the adoption of the Budget by the Board, the expenditures stated are authorized.

SECTION 8. The Auditing Committee shall have supervision over all accounting and bookkeeping, and full control of the financial records. It shall cause the same, once each year, or oftener, to be examined by an expert individual or firm, and shall transmit the report of such expert individual or firm to the Board at the next ensuing regular meeting after such examination shall have taken place.

SECTION 9. The Pension Committee shall determine by such means and processes as shall be established by the Board of Trustees to whom and in what amount the Pension Fund shall be distributed. These determinations or findings shall be subject to the approval of the Board of Trustees.

SECTION 10. The Chairman of each Committee shall report the acts and proceedings thereof at the next ensuing regular meeting of the Board.

SECTION 11. The President shall be ex-officio a member of all Committees and Chairman of the Executive Committee. Vacancies occurring in any Committee may be filled by ballot at any regular meeting of the Board.

ARTICLE IX

NOMINATING COMMITTEE

SECTION 1. At the November meeting of the Board each year, a Nominating Committee of three shall be chosen by lot. Said Committee shall make nominations for membership of the Finance Committee, the Building Committee, the Auditing Committee, and the Pension Committee, and for three members of the Executive Committee, from among the Trustees, to be submitted at the ensuing December meeting and voted upon at the following Annual Meeting in January.

ARTICLE X

SECTION 1. Whenever the word "Museum" is employed in the By-Laws of the Corporation, it shall be taken to mean the building in which the Museum as an Institution is located and operated, the material exhibited, the material in study collections, or in storage, furniture, fixtures, cases, tools, records, books, and all appurtenances of the Institution and the workings, researches, installations, expenditures, field work, laboratories, library, publications, lecture courses, and all scientific and maintenance activities.

SECTION 2. The By-Laws, and likewise the Articles of Incorporation, may be amended at any regular meeting of the Board of Trustees by a vote in favor thereof of not less than two-thirds of all the members present, provided the amendment shall have been proposed at a preceding regular meeting.



UNIVERSITY OF ILLINOIS-URBANA



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